



October 1, 2012

# MERCED CLIMATE ACTION PLAN

To Live for the Next Generation



## **The City of Merced's Climate Action Plan is Online.**

In an effort to preserve trees and reduce greenhouse gas emissions, this document is available online at:

[http://www.cityofmerced.org/depts/cd/planning/climate\\_action\\_plan/default.asp](http://www.cityofmerced.org/depts/cd/planning/climate_action_plan/default.asp)

CD's of the Plan are also available for purchase at the City of Merced Planning Department.

When printing, please print on recycled paper. We also hope that you will help us continue to be sustainable by sharing printed plans with friends and recycling when it is needed.



# TABLE OF CONTENTS



## PART 1:

### EXECUTIVE SUMMARY

Climate Change	1-3
Vision and Goals of the Climate Action Plan	1-5
How the Climate Action Plan was Developed	1-11
Climate Action Plan Findings	1-14
Greenhouse Gas Emission Reductions	1-20



## PART 2:

### CONTEXT OF CLIMATE ACTION

A Call to Action	2-1
Regulatory Drivers of Greenhouse Gas Reduction	2-3
Merced Responds	2-14
Sustainable Merced	2-19
Climate Action Plan Values	2-24



## PART 3:

### CAPACITY ASSESSMENT

Local Opportunities and Challenges	3-1
Leadership Models	3-3
Financing and Budgeting	3-7
Community Partners/Agents of Change	3-15





## PART 4:

# STRATEGIES AND ACTIONS

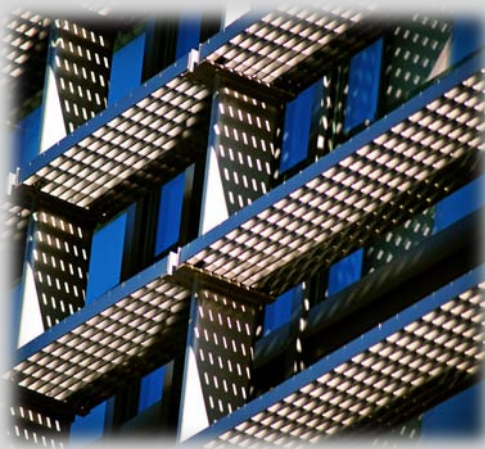
Sources of Greenhouse Gas Emissions	4-1
Climate Action Plan Values and Goals	4-8
Catalog of Recommended Strategies and Actions	4-9



## PART 5:

# IMPLEMENTATION

Locally Driven Plan	5-3
Next Steps	5-6
Phasing Plan and Monitoring, Evaluations and Updates	5-11
Barriers to Implementation	5-16
Implementation Factors	5-18



## PART 6:

# APPENDICES

Appendix A: Acronyms/Glossary	A-1
Appendix B: Implementation Factors	B-1
Appendix C: References / Works Cited	C-1
Appendix D: Backcast and Forecast Methods	D-1
Appendix E: Development-Related Strategies and Actions	E-1
Appendix F: Supporting General Plan Policies	F-1
Appendix G: Cost Estimate for Energy Upgrade	G-1
Appendix H: City Council Resolution Approving the Plan	H-1
Appendix I: Catalog of Recommended Actions by Type	I-1
Appendix J: Business-Related Recommended Actions	J-1

# ACKNOWLEDGMENTS

## TECHNICAL ADVISORY COMMITTEE

Members of the Technical Advisory Committee (TAC) consisted of City Staff who are currently involved in actions that affect the generation of greenhouse gases in City government facilities, and have the capacity to affect change in the community, for example, through water conservation efforts. The TAC was established during the drafting of the Climate Action Plan Background Report to identify past sustainability efforts. As the process moved to preparing the Climate Action Plan (CAP), the TAC role shifted to: (1) describing the funding, capital resources, and personnel of existing programs; (2) review and comment on potential actions that would reduce emissions from City Government facilities and the community; and, (3) advise and inform the Climate Action Plan Ad-Hoc Advisory Committee about planning, waste management, water conservation, and “green” building codes.

**Bill King** — Principal Planner

**Dan Arnold** — Public Works Manager, Internal Services

**Kim Espinosa** — Planning Manager

**Stan Murdock** — Director of Public Works, Operations

**Frank Quintero** — Director of Economic Development

**Michael Stephenson** — Assistant Chief Building Official

**Michael Wegley** — Director of Public Works, Water and Wastewater

**Daniel Ainslie** — Development Manager

## AGENCIES AND COMMUNITY PARTNERS

Prior to formal presentation and action by the City Council, the TAC listed above, and other local agencies, peers, and partners were invited to review and comment on the Climate Action Plan to offer technical and professional guidance, and include:

- Merced County Planning
- Jennifer Halpin, Recycling Information Specialist, Merced County Association of Governments
- Theresa English-Soto, Community Energy Manager, PG&E
- Des Johnston / Santa Fe Planning



## CLIMATE ACTION PLAN ADVISORY AD-HOC COMMITTEE

On September 7, 2010, the City Council took two key Climate Action Planning steps: (1) adopting City Council Resolution 2010-80 committing to take steps to reduce greenhouse gas emissions through adoption of a Climate Action Plan; and (2) directing staff to begin the recruitment process for members of a Climate Action Plan Ad-Hoc Advisory Committee. The appointment of the Committee was made by the City Council on December 20, 2010. The Committee has met monthly since January 2011, and concluded its work with City Staff in September 2011.

In December 2010, the City Council appointed the Climate Action Plan Ad-Hoc Advisory Committee and provided objectives to craft a Climate Action Plan for the City of Merced. The Committee reviewed Merced's Greenhouse Gas Emission Inventory and Background Report, provided comments on funding, leadership, and community partners, and reviewed GHG reduction strategies of similar communities that could result in significant emission reductions for Merced to meet the target of 1990 levels by the year 2020.

The Committee framed the Plan by four sustainability values that support healthy, prosperous, and livable communities. Each value is supported by goals, which directly align with primary methods to reduce greenhouse gas emissions. The Plan contains 154 implementation actions, many of which are from the *Merced Vision 2030 General Plan* policies or based on them.

VALUES	GOALS
<i>Healthy Communities</i>	Enhance Mobility of all Transportation Modes Sustainable Community Design
<i>Quality Natural Resources</i>	Water Conservation and Technology Protect Air Resources Waste Reduction
<i>Clean Energy Resources</i>	Increase the Use of Renewable Energy Resources Building Energy Conservation
<i>Leaders and Partners</i>	Public Outreach and Involvement

## Climate Action Plan Ad-Hoc Advisory Committee Members

**Chair, Michael Belluomini** -- Facility Manager, Merced Union High School District

**Vice-Chair, Christina Alley** -- Chief Executive Officer, Central Valley Coalition for Affordable Housing

**Brett Baker** -- Brett Baker Construction, Inc. doing business as (dba) G.J. Gardner Homes

**Lyndsey Baladad** -- Golden Valley Health Centers and Merced/Mariposa County Asthma Coalition

**Kahri Boykin** -- Renewable energy project developer for local business, Castle Solar

**Wayne Eisenhart** -- Former City of Merced Planning Commissioner

**Matt Fell** -- Senior Transportation Planner with the Merced County Association of Governments (MCAG)

**Jim Genes** -- Special Assistant to the Administrative Vice Chancellor at the University of California, Merced

**Rod Ghearing** -- Transit Manager for the Transit Joint Powers Authority for Merced County, the operator of Merced County Transit "The Bus"

**Lisa Kayser-Grant** -- Community advocate for sustainable development

**Matthew Hirota** -- Owner of "Recycle Merced"

**Vanessa Lara** -- Merced Irrigation District, Public Benefits and Major Accounts Manager, and Board of Directors member of the Greater Merced Chamber of Commerce

**Lane Puckett** -- Account Executive, Pacific Gas and Electric Company, Energy Solutions and Service

**Jim Marks** -- General Manager of The Cirrus Company, a real estate services company based in Merced, California, and the General Manager of Heritage Management Group, a property management company in Merced

**Kraig Magnussen** -- Chief Operations Officer for the Merced City School District

**Nellie Muniz Smith** -- Executive Director, Merced County Hispanic Chamber of Commerce

**Kevin Rico** -- CEO and co-founder of SunTherm Energy, Inc., based in Merced, California

**John Wiersma** -- Planning Analyst with the Merced Irrigation District



## CAP INTERNSHIP/VOLUNTEER TEAM

The City of Merced extends its gratitude and appreciation to several student interns who contributed greatly to the preparation of the Climate Action Plan and its background report.

**Kevin Deniz** – Local Government Approaches to Emission Reductions

**Jared Calinisan** – Plan Graphic Design Concept

**Fizza Hasani** – Plan Graphic Design Concept

**Ashley Chiang** – 2008 City of Merced Greenhouse Gas Emission Inventory (Background Report)

**Pamela Contreras** – Federal Funding Programs (Background Report)

**Denise Zitnik** – Co-Benefits (Background Report)

**Caitlin Kniazewycz** – Green Funding Trends (Background Report)

## Acknowledgement of Financial Support

Preparation of the Merced Climate Action Plan was financially supported by the Department of Energy under Award Number DE-SC0001848 to the City of Merced, California.



Energy Efficiency and Block Grant Program

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof





# PART 1: Executive Summary

An Overview of the Climate Action Plan



# PART 1: EXECUTIVE SUMMARY

- Global Climate Change
- Values, Goals, and Strategies of the Climate Action Plan
- How the Climate Action Plan was Developed
- Climate Action Plan Findings
- Greenhouse Gas Emission Reductions



# CLIMATE CHANGE

Global Climate Change (GCC), which is now generally accepted by many in the scientific community to be occurring and caused by Greenhouse Gases (GHGs), is a widely discussed scientific, economic, and political issue in the United States and internationally. Briefly stated, climate change is the cumulative change in the average weather of the earth that may be measured by changes in temperature, precipitation, storms, and wind. GHGs are gases that trap heat in the atmosphere.

Merced's Climate Action Plan includes goals, strategies, and actions to reduce local community GHG emissions to 1990 levels by the year 2020, consistent with the state objectives set forth in the "Global Warming Solutions Act," otherwise known as AB 32. Taking action on climate change provides tangible benefits for citizens today – and ensures that future generations will have access to the resources that support healthy, prosperous, and livable communities. The Merced Climate Action Plan seeks to reduce GHG emissions within this larger framework of sustainability. These benefits include:

- A vibrant downtown, urban centers, and livable neighborhoods
- Walkable communities with increased mobility options
- Efficient and convenient transportation systems and services
- Energy efficient / low cost utility buildings
- Increased water supplies
- Reduced conversion of agricultural, resource, and open space lands
- Improved air quality
- Less municipal waste
- Informed and engaged citizenry / opportunities for community partnerships



The Climate Action Plan is an assemblage of existing City policies, state mandates, and similar actions that highlight Merced's past, present, and future efforts to achieve these community-based goals. It's a roadmap with suggested tools of how the Merced community can chart its own path, to be implemented at a time, manner, and approach determined by the community and its elected officials.

**The State of California's AB32's Scoping  
Plan States:**

**"Local governments are essential partners in achieving California's goals to reduce greenhouse gas emissions...and have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect greenhouse gas emissions through their planning and permitting processes, local ordinances, outreach and education" efforts, and municipal operations."** <sup>25</sup>

# VISION AND GOALS OF THE CLIMATE ACTION PLAN

## Success is Proactive Reaction

Merced is at a transformative period of growth. New pressures and influences exist, and include: 1) Central Valley's 2009 population of 7 million is expected to grow to 12 million people by 2040 <sup>1</sup>; 2) increased State vision and direction concerning land use, housing, transportation, and support for compact cities; and 3) the economic recession and associated budget-related influence on growth patterns. UC Merced's efforts to develop sustainable communities is inspiring entrepreneurs and younger markets to develop and use reliable clean energy technologies. How will these factors affect Merced? The decisions and actions we take today will define the outcomes of Merced tomorrow.

## Practical Benefits of the Plan

Merced's Climate Action Plan presents a comprehensive list of actions, that when implemented, will help to achieve broadly-supported community values including: 1) protecting our water and air resources; 2) reducing the waste-stream to the landfill; 3) improving energy-efficiency; 4) enhancing choice in mobility; and 5) creating healthy and livable communities, while at the same time reducing greenhouse gas emissions.

### *Grant Fund Opportunities*

The television series "Star-Trek" first introduced many of us to the phrase, "carbon-based life-forms," describing the dominant nature of carbon on earth and other planets. Indeed, as described in this report, carbon is everywhere. Funding opportunities for climate-change related projects and programs are similarly available, especially in California, and as noted above, climate change related projects touch many of the community's broad goals and policies. For example, the Federal Emergency Management Agency (FEMA) identified that fitting cooling centers with alternate energy sources to mitigate against extreme heat is a qualifying project through its Hazard Mitigation Program. Likewise, the State of California, Strategic Growth Council identified the planning and/or construction of parks in the urban core to reduce the "heat-island effect" as a qualifying project through its "Urban Greening Program." Merced's robust Climate Action Plan suggests several opportunities to seek funding that supports the diverse needs of its community.

### *Energy Efficiency = Cost Savings*

Whether a long-time resident looking to balance their budget, or a start-up company seeking that competitive edge, the bottom-line is the bottom-line. At a time when national and regional energy prices keep rising, local communities should explore and implement programs that will help its citizens to reduce energy consumption and be able to use alternative forms of energy. The Climate Action Plan

includes several ideas to address the energy needs of the community, capitalizing on federal and state programs to help communities adjust to future forecasts, whether based on market conditions or the regulatory environment.

### ***Development Ready “Red-Carpet” Service***

Merced’s robust Climate Action Plan can be the foundational document upon which a “Programmatic Climate Action Plan” can be crafted to create a streamlined and predictable greenhouse gas emission assessment development review process. Senate Bill (SB) 97 acknowledges that climate change is an important environmental issue that requires analysis under the California Environmental Quality Act (CEQA). CEQA requires that Lead Agencies analyze the greenhouse gas emissions of proposed projects, and must reach a conclusion regarding the significance of those emissions, and, when a project’s greenhouse gas emissions may be significant, lead agencies must consider a range of potential mitigation measures to reduce those emissions. These assessments are highly technical, resulting in increased review time and financial costs to applicants of development projects, and legal exposure when not prepared properly. Lead Agencies may significantly streamline this analysis through adoption of a Programmatic Climate Action Plan, which would follow adoption of a Climate Action Plan.

## **Merced’s Implementation Approach**

### ***Implementation Decision Tree***

The Climate Action Plan is primarily a collection of existing and proposed City policy statements that foremost, improve the community and secondarily reduce greenhouse gas emissions. As a set of policy statements, implementation of the CAP necessitates further community involvement involving citizens, elected and appointed officials. The Implementation Chapter includes an “Implementation Decision Tree” that describes the process City Department heads and managers will use when taking steps to initiate implementation of the actions recommended in this plan, and are based on numerous statements in the CAP that emphasize public review as opposed to autocratic deployment of actions.

### ***Community-Based Actions***

The majority of the Plan’s recommended actions are based in public outreach and education, incentives, capital projects, and volunteer actions. The CAP does include some suggested code amendments, but these are intended to increase development-based options. For example, Actions SC 2.2.7 and SC 2.2.8 would allow a greater range of land uses throughout the City, notably in business parks and industrial zones which retranslates to permit streamlining, increased development options and opportunity for job growth. There are still other actions, based on general plan policies that present the possibility of code changes to improve the community.

### ***Dedicated Leadership and an Engaged Community***

Local governments, residents, and businesses can work independently and/or together to achieve Plan values and goals. By pushing the limits of what is possible, visions of our future can be achieved -- a vision of healthy communities, quality natural resources, and clean energy resources. Realization of these values and related goals are possible through dedicated leadership and an engaged community.



### ***A Business Friendly Climate Action Plan***

Generally speaking, while a CAP may send a positive message to some entrepreneurs and businesses looking to locate in Merced, others may interpret it differently. Therefore, the CAP was customized based on the recognition of Merced's local economy and community-wide interest to retain and enhance existing businesses and to attract new enterprises to the City of Merced.

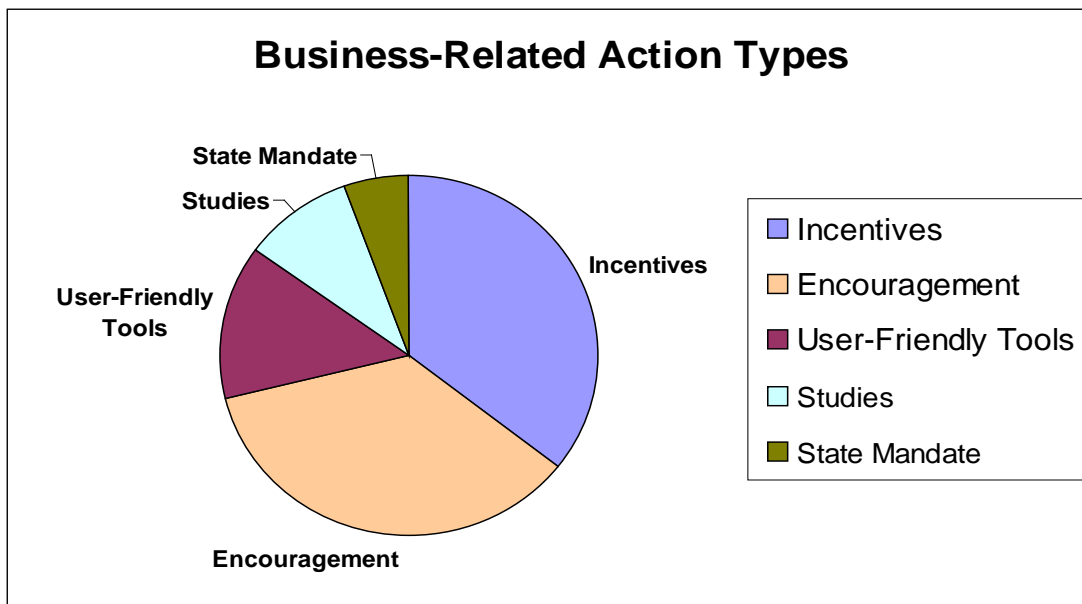
With the Merced Climate Action Plan, there are no new requirements on local businesses, no new fees, assessments, or other charges, and it demands no monitoring or tracking of emissions or reductions thereof. These parameters apply to new and existing businesses alike. Rather, the CAP offers a list of recommended business-friendly actions primarily based on incentives, improved communication, and encouragement. Other business-related actions are either state-mandates or studies to ensure that potential subsequent programs have merit prior to implementation. Of the total 156 recommended actions in the Merced CAP, 73 are business-related, with most of these based on incentives, improved communication, and encouragement (See Appendix J).

#### **Local Governance**

**Although the CAP establishes specific strategies, they are not binding on the City Council or the community.**



**Incentive**-based actions are supportive of businesses and includes efforts to provide funding, infrastructure, advertising, relief from development standards and formation of “win-win” community partnerships. **Improved communication**-based actions adds certainty to the City’s development review and permit processes, reduces subjective reviews and decisions (levels the playing field), and places current code requirements in user-friendly guidelines. **Encouragement** is attained mainly through educational and promotional materials. Messaged and implemented properly, the Merced CAP can be a showcase of how positive change can result from voluntary actions of informed and supported community, and be a reason to do business in Merced.



# Outline of the Plan's Values, Goals, and Strategies

## VALUE 1: HEALTHY COMMUNITIES

### ***Goal 1: Enhance Mobility of all Transportation Modes (EM) /***

#### Strategy Topics

- Site Design Planning
- Transit Planning
- Bicycle Planning & Projects
- Pedestrian Planning & Projects
- Mobility Development Review Policies

*21% of the GHG Emissions targeted for reduction will be accomplished through enhanced mobility programs and projects.*

### ***Goal 2: Sustainable Community Design (SC)***

#### Strategy Topics

- Compact Urban Form / Infill
- Mixed Use Transit Oriented Development
- Growth Management Planning
- Community Appearance
- Community Design Development Review Policies

*10% of the GHG Emissions targeted for reduction will be accomplished through sustainable land use designs and urban growth management.*

## VALUE 2: QUALITY NATURAL RESOURCES

### ***Goal 3: Water Conservation and Technology (WC)***

#### Strategy Topics

- Water Conservation and Technology
- Reduce Groundwater Pumping
- Water Efficient Landscapes
- Water Conservation Development Review Policies

*5% of the GHG Emissions targeted for reduction will be accomplished through water management practices.*

### ***Goal 4: Protect Air Resources (AR)***

#### Strategy Topics

- Reduced Vehicle Trips
- Clean Trips – Clean Vehicles
- Reduce Non-Vehicular Emissions
- Air Resource Development Review Policies

*10% of the GHG Emissions targeted for reduction will be accomplished through programs and actions that protect the quality of Merced's air resources.*

### **Goal 5: Waste Reduction (WR)**

#### Strategy Topics

- Reduce, Reuse, and Recycle
- Waste Reduction Development Review Policies

*1% of the GHG Emissions targeted for reduction will be accomplished through waste reduction programs.*

## VALUE 3: CLEAN ENERGY RESOURCES

### **Goal 6: Increase the Use of Renewable Energy Sources (RE)**

#### Strategy Topics

- Renewable Energy Systems
- Renewable Energy Development Review Policies

*23% of the GHG Emissions targeted for reduction will be accomplished through utilization of renewable resources.*

### **Goal 7: Building Energy Conservation (BE)**

#### Strategy Topics

- Green City Facilities and Infrastructure
- Energy Efficiency in New Development
- Residential Energy Efficiency
- Commercial and Industrial Performance
- Urban Forestry / Heat Island Effect
- Building Energy Conservation Development Review Policies

*30% of the GHG Emissions targeted for reduction will be accomplished through energy conservation habits and equipment.*

## VALUE 4: LEADERS AND PARTNERS

### **Goal 8: Public Outreach and Involvement (PO)**

#### Strategy Topics

- Community Resources
- Support a Green Economy
- Support Sustainable Neighborhoods

The percentages above are representative of the emission amounts described in the City's 2008 GHG Emission Inventory. For example, large reductions through energy conservation and equipment retrofits respond directly to the large amount of emissions coming from Merced's existing buildings.

## HOW THE CAP WAS DEVELOPED

### Climate Action Planning – Broad Planning Process and Objectives

#### BROAD PLANNING PROCESS

While the City of Merced has already begun to reduce greenhouse gas emissions through a variety of sustainability actions, the City of Merced Climate Action Plan is *Milestone No. 3* of a typical project development approach and contains five general steps in a cyclical framework, adapted to the purpose of Merced's Climate Action Plan.

**Milestone One:** Conduct a baseline emissions inventory and forecast.

**Milestone Two:** Adopt an emissions reduction target for the forecast year.

**Milestone Three:** Develop a local Climate Action Plan.

**Milestone Four:** Implement the Climate Action Plan.

**Milestone Five:** Monitor progress and report results.



## MERCED'S MILESTONES

In November 2009, the City Council accepted Energy Efficiency and Conservation Block Grant funds from the Federal Department of Energy to undertake several projects to increase energy efficiency. One of these projects was the drafting of a Climate Action Plan (CAP). Work by City Staff on Climate Action Planning began in January 2010, and focused on drafting the *City of Merced Climate Action Plan Background Report*, which included the City's first Greenhouse Gas Emission Inventory. The background report was completed in January 2011 and helped frame the next steps in the process, selecting a greenhouse gas reduction target and drafting the Climate Action Plan.

On September 7, 2010, the City Council took two key Climate Action Planning steps: (1) adopted City Council Resolution 2010-80 committing to take steps to reduce greenhouse gas emissions through adoption of a Climate Action Plan; and, (2) directed staff to begin the recruitment process for members of a Climate Action Plan Ad-Hoc Advisory Committee. The appointment of the Committee was made by the City Council on December 20, 2010. The Committee has met monthly since January 2011, and concluded its work with City Staff in September 2011.

On February 22, 2011, the Merced City Council adopted greenhouse gas reduction parameters, targets, and an approach to drafting the City's Climate Action Plan, notably, to work with a community-based Committee to identify ways to reduce GHG emissions to 20% below 1990 levels by 2020 for Government-based facilities and the Community as a whole. Then, on June 4, 2012, the Merced City Council voted that a greenhouse gas reduction target of 1990 levels by 2020 be used for the Climate Action Plan instead.



On October 1, 2012, the Merced City Council adopted the City of Merced Climate Action Plan by Resolution 2012-70 (Appendix H).

### Merced Vision 2030

#### General Plan Policy SD-1.7:

**“Develop and Implement a Climate Action Plan for the City.” Through recent changes in State and Federal law, local governments like the City of Merced have begun to pay more attention to what can be done regarding Climate Change and Greenhouse Gas reduction on the local level.**



## OBJECTIVES OF THE CAP PLANNING PROCESS

The Merced CAP was developed following the City Council objectives:

- Current City policies will form the foundation upon which specific strategies will be crafted;
- The Climate Action Plan will include a set of recommended strategies and implementation plan;
- Among other topics, the recommended strategies will address state-mandated programs, such as Water Conservation (SB x7-7 2009), Commercial Recycling (AB32), Building Efficiency (CalGreen Code), and other “Co-Benefit” categories and items;
- Implemented strategies will be financially feasible;
- The plan’s focus will be qualitative, in the sense of identifying and crafting feasible strategies that can be implemented in Merced;
- Quantify projected GHG emissions and recommended actions;
- The Plan will seek to create linkages between it and established City plans such as the City’s general, specific, and master plans so that they can work together to achieve the reduction target;
- The strategies will complement and be consistent with the Merced County Association of Government’s (MCAG) charge to craft a Sustainable Communities Strategy as part of Merced County’s Regional Transportation Plan, which has implications for future transportation funding and review of development projects; and,
- Strategies will be implemented in an incremental manner, based on the needs and ability of the Community.

## IMPLEMENTATION

The actions that we take today will ensure a sustainable future tomorrow. Implementation of Merced’s CAP can only be accomplished with the help and participation of its community. The CAP provides tools for new community partnerships to thrive and succeed. These tools identify funding sources, partners, and responsible entities to accomplish detailed tasks within specified timelines. Positive change will also require implementing adopted policies. Most importantly, achieving a sustainable future will require the enthusiasm and participation of every resident of Merced.

### Implementation Steps:

**The City Council and public will be afforded an opportunity to review recommended actions and related costs and benefits, prior to implementation of any action. Although the CAP establishes specific strategies and actions that the City and community can implement over time, it is not binding on the City Council or the community.**

# CLIMATE ACTION PLAN FINDINGS

City Staff worked with the Climate Action Plan Ad-Hoc Committee to understand how the *Context* of Climate Action Planning and the *Capacity* of the community would affect which GHG reduction actions would be selected. The *Context* of climate action planning includes these topics: the City's 2008 Greenhouse Gas Emission Inventory, the City Council greenhouse gas reduction target, and regulations applicable to "New Development," "Local Government," and the "Community." The *Capacity* to implement the CAP includes such topics as opportunities, constraints, community partnerships, leadership, funding, and past and current sustainability efforts of the City. Based on this overall direction, committee assessment teams were formed, and CAP goals, strategies, and actions were then reviewed, amended, and finally confirmed by the Committee.

## CAP Context -- Overview

In PART 2 of this Climate Action Plan, several factors that influence Climate Action Planning were identified and are the origin of several recommended GHG reduction strategies and actions.

### ***Regulatory Drivers of Greenhouse Gas Reduction***

Although AB32 (The California Global Warming Solutions Act of 2006) does not require local governments to adopt a Climate Action Plan, a plethora of related rules, regulations, and incentive programs have originated from AB32 that affect local governance, and include:

- Sustainable Communities Strategy (SB 375)
- CEQA – Global Warming Guidelines (SB97, Dutton, 2007)
- California Green Building Standards Code (CALGreen, Title 24, Part 11)
- Building Energy Audit (at time of Sale, Lease or Refinance) California AB 1103 (2007)
- Complete Streets (AB 1358, Leno, 2007)
- eTRIP / Rule 9410 – Employer Based Trip Reduction
- Model Water Efficient Landscape Ordinance
- Water Conservation Bill of 2009 (SBx7.7, Steinberg, 2009)
- Commercial Recycling



The City's initial GHG reduction efforts focus on strategies and actions that respond directly to these regulatory drivers.

### ***Climate Adaptation***

The potential impacts of climate change should be considered. Climate hazards exacerbated by climate change that may directly affect Merced include high temperatures, flooding, and drought. Strategies and actions that reduce greenhouse gas emissions and prepare the community for changing weather patterns should be identified and implemented, such as expanding the City's urban forest and weatherizing homes and businesses.



### ***Merced's Greenhouse Gas Reduction Target***

Merced's GHG reduction target of 1990 levels by 2020 is commensurate with that of the State of California. This target will garner attention and action to attempt to achieve it and in doing so, positive changes to the community will occur. Benefits will apply to both local government facilities and the community, but based on the fact that local government facilities account for only 4% of the total community emissions, the bulk of emission reduction potential and benefits will apply to the private residential, commercial, and industrial sectors.

### ***Sustainable Growth Programs***

Merced has and will continue to strive toward sustainable actions. The Merced Climate Action Plan is framed by sustainability values that support healthy, prosperous, and livable communities. Current and future programs worth continuing, which also result in reduced GHG reductions, include:

- Development of the High Speed Rail Station and Environs
- Land Use Development Consistency with the San Joaquin Valley Blueprint
- Continued Implementation of Merced's Urban Village Concept
- Water Supply Conservation Efforts
- Waste Management Efforts
- Bicycle Transportation and Planning
- Employee Trip Reduction Plan
- Fleet Management



## CAP Capacity -- Overview

In PART 3 of the Climate Action Plan, the capacity of the Merced Community was assessed to gauge its ability to implement the Plan. The assessment discussed opportunities, challenges, community partners, leadership, and funding. The key findings of this assessment are summarized below:

### ***Opportunities***

As noted in a study by UC Davis <sup>1</sup>, the City of Merced has a good potential to transition into a sustainable community. The capacity assessment identified several opportunities that support this conclusion, and include the following:

- *University of California, Merced:* From the beginning, UC Merced was envisioned to be a campus shaped by sustainability, possessing the potential to pilot sustainability strategies that can be a model for other growing communities.<sup>2</sup> Such strategies include the following efforts: Sustainability Strategic Plan, Triple Net Zero Commitment, LEED (Leadership in Energy and Environmental Design) Buildings, and Public Engagement.
- *Merced's Urban Villages:* The City's General Plan is based on the concept of the "urban village," a form of transit oriented development and mixed use development, which are foundational elements of reducing GHG emissions through land use planning.
- *High Speed Rail Station:* The planned High Speed Downtown Rail Station has the potential to reduce GHG emissions through reconstruction projects, provision of an alternative long distance travel mode, and infill development.
- *Housing:* The older housing units in the City of Merced provide an opportunity for energy-efficiency upgrades. Model programs such as the Valley Innovative Energy Watch (VIEW) Partnership should be considered in Merced to achieve such upgrades. The VIEW Partnership is between Southern California Edison (SCE), Southern California Gas Company (SCG), the counties of Kings and Tulare, and the cities of Hanford, Lindsay, Porterville, Tulare, Visalia, and Woodlake.<sup>21</sup>
- *San Joaquin Valley Blueprint:* The San Joaquin Valley Blueprint is a long range vision for a more efficient, sustainable, and livable future for the Valley. Blueprint Planning efforts are highly regarded as probable templates for creating Sustainable Community Strategies (SCS) in the next generation of Regional Transportation Plans, giving the Blueprint Plans a greater role in regional and local land use planning. The SCS is the key AB32 driver to reduce GHG emissions through land use planning.



- *Bellevue Corridor Community Plan:* A State of California objective for the grant of funds to the City of Merced to prepare the Bellevue Corridor Community Plan is to support the development and implementation of effective and/or innovative local plans that support the State's AB 32 GHG emission reduction targets and implement SB 375, while creating sustainable communities. Looking to obtain future funding sources for City infrastructure, the *Bellevue Corridor Community Plan* may be used to successfully compete for federal and state transportation funds.
- *Compact Urban Growth:* Urban growth occurs as redevelopment, infill, or urban expansion. The City's General Plan emphasizes compact urban growth and infill over urban expansion, but recognizes that large-scale redevelopment is a less likely method of accommodating population demands. Although the General Plan update includes a large future growth area, *Urban Expansion* policies are in place to manage the rate of urban expansion based on community needs.



- *Water Conservation Efforts:* The Mission of the City's Water Division is to provide the City of Merced with a continuous supply of clean and safe drinking water, while promoting water conservation. These goals are implemented through several conservation programs and through collaboration with other water supply agencies.
- *Sustainable Growth Programs:* The City is engaged in several programs that reduce GHG emissions, including: land use planning, bicycle transportation planning, downtown revitalization, waste management, "Build a Green Fleet" program, water conservation, employee trip reduction plan, and a municipal energy-efficiency retrofit program.

## ***Challenges***

There are challenges and potential obstacles to implementation of the City of Merced Climate Action Plan that need to be acknowledged and overcome if the benefits of the Climate Action Plan (CAP) are to be realized. The Climate Action Plan (CAP) is being implemented during one of the most challenging economic times for California and the nation in memory; it is especially challenging in California's Central Valley. However, it must be remembered that while the challenges are great at the inception of the implementation phase, conditions will shift and shift again during the period of implementation (2012 – 2020).

While the Community faces several challenges, there could also be positive flip-sides to them. For example, while many members of the community may lack the financial resources to perform energy upgrades, this trait could also make them eligible for financial grants and aid or program assistance. Implementers of the Plan should be aware that challenges may be portals of opportunity. Challenges include: local economy and associated unemployment and low wages, low public awareness and associated support; limited supply of funds and staff, and language barriers.

## ***Leadership***

Effective implementation of the strategies will require the participation and cooperation of an array of Federal, State, and local government agencies and quasi-public and non-profit organizations. In these times of reduced budgets and staff, a balanced use of resources and coordination of efforts will be necessary to successfully implement the plan.

## ***Community Partnerships***

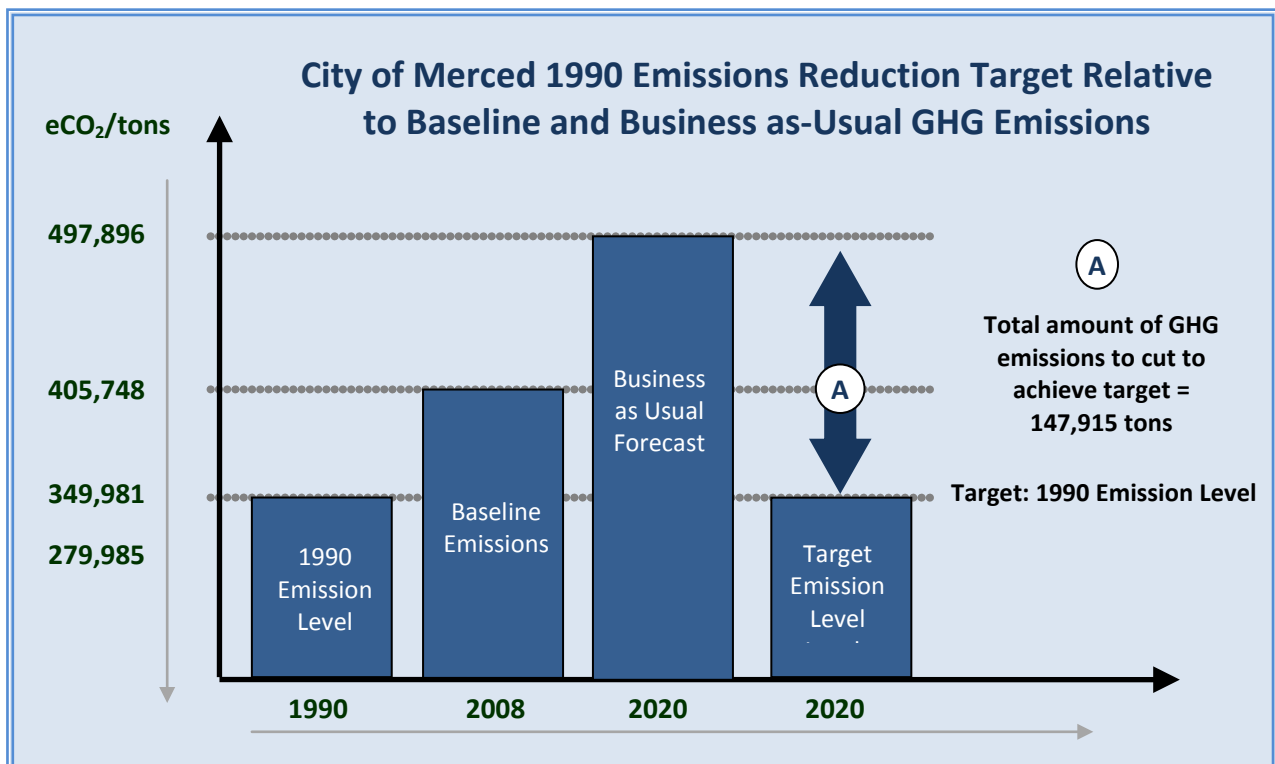
Several community groups having sustainability programs exist in the community. These include Merced County Community Action Agency, CALPIRG's Energy Service Corps (ESC), the *Greater Merced Chamber of Commerce's* REACON Team, among others, who implement activities to improve energy efficiency and waste management.

## ***Funding***

If federal and state emphasis on climate change and sustainable growth continue, a broad range of funding sources and financial tools will be available to implement many of the recommended actions. It will be important for the community to be able to recognize these potential funding sources, and to have a strategy in place to successfully compete for them.

## GREENHOUSE GAS EMISSION REDUCTIONS

On June 6, 2012, the Merced City Council voted that a greenhouse gas reduction target of “1990 levels by 2020” be utilized in the Climate Action Plan. Due to the availability of data and suitability to estimate the 1990 emission level, a GHG inventory of 2008 emissions was completed (Background Report, Chapter 8). Based on the 2008 baseline emission and the business-as-usual emission projection, 147,915 metric tons of CO<sub>2</sub>e will need to be removed from Merced’s annual GHG emissions. Future adjustments to this estimate may be required due to differences between forecasted population growth and actual population changes.



## GHG Reductions Targets by Plan Goal

The summary table below identifies the Plan's goals, the number of strategies and actions within each goal area, and the goal's contribution toward the GHG reduction goal. Each goal area has a dedicated section within this document (PART 4) where specific strategies and actions are described.

<b>Numbers of Strategies and Actions and GHG Reduction Targets by Goal</b>				
<b>Merced CAP Goals</b>	<b>Number of Distinct Strategies</b>	<b>Number of Distinct Actions</b>	<b>Percent of Total Reduction</b>	<b>Anticipated MTCO<sub>2</sub>e by 2020</b>
Enhance Mobility (EM)	5	20	21.0%	31,062
Sustainable Community Design (SC)	5	24	10.0%	14,792
Air Resources (AR)	4	20	10.0%	14,792
				<b>60,645</b>
Water Conservation (WC)	4	19	5.0%	7,396
Renewable Energy (RE)	2	12	23.0%	34,020
Building Energy Conservation (BE)	6	32	30.5%	45,114
				<b>86,530</b>
Waste Reduction (WR)	2	13	0.50%	740
Public Outreach	3	16	0.0%	0
<b>TOTALS</b>	<b>31</b>	<b>156</b>	<b>100%</b>	<b>147,915</b>





# PART 2: Context of Climate Action Plans

What Climate Action Planning is and why Merced is Involved

## PART 2: CONTEXT OF CLIMATE ACTION PLANNING

Though the key product of the Climate Action Plan (CAP) is a set of measures that Merced can deploy to reduce greenhouse gases, it is first necessary to understand the context of Climate Action Planning as it applies to the City of Merced. Five key topics are discussed:

- A Call to Action
- Regulatory Drivers of Greenhouse Gas Reduction
- Merced Responds
- Sustainable Merced
- Climate Action Plan Values

# A CALL TO ACTION

## Introduction

During the 1970's, sweeping environmental laws were agents of change that led to advancements in technological improvements and operations resulting in cleaner industries, cars, and buildings. Due to cleaner operating cars and factories, air pollution in many parts of the country decreased. For example, high levels of smog dropped significantly in the City of Los Angeles due to technological advancements such as the catalytic converter and the California Smog Check Program. Concerns over environmental impacts became part of the decision-making process for projects, programs, and policies. Forestry and mining practices were scrutinized and new methods to extract these resources were put in place to lessen the impact on our forests and other denuded lands. Despite these advancements, biological and material resources upon which mankind relies, continue to be impacted.



## Climate Change

Global Climate Change (GCC), which is now generally accepted by the scientific community to be occurring and caused by Greenhouse Gases (GHGs), is a widely discussed scientific, economic, and political issue in the United States and internationally. Briefly stated, GCC is the cumulative change in the average weather of the earth that may be measured by changes in temperature, precipitation, storms, and wind. GHGs are gases that trap heat in the atmosphere. The State of California's AB32 Scoping Plan states that "local governments are essential partners in achieving California's goals to reduce greenhouse gas emissions and have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect greenhouse gas emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations."<sup>25</sup> As in earlier decades, focused environmental stewardship efforts continue to evolve and develop.

## Climate Adaptation

Despite State efforts to reduce GHG emissions, the effects of climate change will still be felt in communities in the coming decades.<sup>4</sup> As Merced prepares a Climate Action Plan (CAP), the potential impacts of climate change should be considered to reduce negative impacts to its citizens.

In response to Governor Schwarzenegger's *Executive Order S-13-08*, the Natural Resources Agency, in cooperation with multiple state agencies, prepared the "2009 California Climate Adaptation Strategy," which provides recommendations on how to manage against climate change threats. According to that document, hazards that may directly affect Merced include high temperatures, flooding, and drought. These hazards have always been present, but with the progression of climate change, these will become more severe and frequent.<sup>49</sup>

Many of the actions identified in the CAP to reduce GHG emissions will also help the City of Merced's government, businesses, and residents adapt to a changing climate. For example, extreme and prolonged heat waves can put considerable strain on the reliability of energy delivery in peak periods, possibly leading to service disruptions during times when cooling is most needed. By increasing energy-efficiency across the City, such service disruptions are less likely and the City will be able to better cope with those situations. Expanding Merced's urban forest would also help citizens cope with heat waves and reduce energy demand and associated costs.





# REGULATORY DRIVERS OF GHG REDUCTION

## Introduction

Many state and federal policies, initiatives, and planning efforts have and continue to shape the context for creating sustainable communities. As a result of these broad visionary planning initiatives, specific regulations controlled by the State or mandated to local governments have a direct influence on City resources and GHG emissions.

The City's *Climate Action Plan Background Report* describes many of these regulations, several of which were crafted to “drive” Climate Action Planning in the State of California and to create “opportunity” for expansion of the green economic sector. In some cases, local governments are directed to take action, and in other cases, the State retains control over implementation. This section provides an overview of the broad visionary planning initiatives, highlights the most prominent of the regulatory laws and programs, lists legislation supporting of local government sustainability efforts, and discusses state trends. Additional information on these topics can be found in the City of Merced *Climate Action Plan Background Report*.

## Broad Visionary Planning Initiatives

### ***Interagency Partnership for Sustainable Communities (2009)***

The Interagency Partnership for Sustainable Communities is a federal interagency initiative between the U.S. Environmental Protection Agency, Department of Transportation, and Department of Housing and Urban Development to incorporate sustainability and livability into their three agencies and coordinate policies and programs to support their livability principles.<sup>6</sup>



### ***Vision California Project***

The California High Speed Rail Authority in partnership with the Strategic Growth Council is developing two new modeling tools to formulate and compare how California can accommodate projected growth. Early analyses shows household costs savings from more efficient growth patterns.<sup>6</sup>

### ***California Green Jobs Council***

Established in 2008, the Green Jobs Council is an intergovernmental effort to help prepare workforce for the growing green economy (California Workforce Investment Board).<sup>6</sup>

### ***State Planning Priorities (AB 857, 2002)***

This bill established three primary state planning priorities: 1) infill development in the cities, 2) protection of open space, and 3) farmland and habitat outside the cities, and more efficient use of land wherever development occurs. These priorities suggest specific ways in which state government can



prioritize activities related to infrastructure spending and land use to promote more sustainable development in California.<sup>6</sup>

### ***State Housing Element Law***

While this law is more than 20 years old, specific statutory references promote multifamily development and redevelopment. Adoption of local housing elements and their programs has resulted in many communities increasing densities and promoting more infill and compact development.<sup>6</sup>

### ***20x2020 Water Conservation Plan***

The California Department of Water Resources, in cooperation with other state agencies to determine where a 20 percent reduction in water usage would be feasible, prepared the 20x2020 Water Conservation Plan, a framework for state and local action on water conservation.<sup>7</sup>

### ***California Water Plan Update 2009***

This Plan prepared by the DWR details comprehensive strategies for integrated water management, and documents the issues and concerns facing water management in California and a vision for sustainability.<sup>6</sup>

### ***Urban Water Management Planning Act***

In 1983, State Assembly Bill 797 modified the California Water Code Division 6, by creating the *Urban Water Management Planning Act* (UWMPA). Since the passage of SB 610 and SB 221 in 2001, developers must show that large new developments will have an adequate 20-year supply of water before each development can be approved. Recent amendments to the UWMPA are the result of the enactment of Water Conservation Bill of 2009, and other legislation.

### ***Global Warming Solutions Act***

Since 2005, the State of California has responded to growing concerns over the effects of climate change by adopting a comprehensive approach to addressing emissions in the public and private sectors. California's role as a global leader in reducing GHG emissions was solidified with the passage of the Global Warming Solutions Act of 2006 (AB 32). AB 32 requires the state to reduce its greenhouse gas emissions to 1990 levels by 2020. It also required the California Air Resources Board (CARB) to develop a policy plan for reaching AB 32 emissions reduction goals and to adopt and enforce regulations to implement the plan. The resulting AB 32 Scoping Plan was adopted by CARB in December 2008. Among the many strategies articulated, it encourages local governments to reduce emissions in their jurisdictions by a degree commensurate with state goals. AB 32 stopped short of setting mandatory targets for local government compliance. The state has not set an air quality threshold, though it has the authority to do so through the CARB.<sup>26</sup>

**The San Joaquin Valley Air Pollution Control District is one of 35 districts in California responsible for enforcing state and federal air pollution reduction laws, including AB 32, and can establish greenhouse gas threshold levels that are enforceable within their jurisdiction.<sup>26</sup>**

## State-Controlled Regulations

The following are state reduction strategies included in the AB 32 Scoping Plan. The State of California has approved, programmed, and/or adopted these actions. Furthermore, they are programs or projects that require no local involvement.

### ***Low Carbon Fuel Standard***

The State is proposing to reduce the carbon intensity of transportation fuels consumed in California. To achieve this, CARB is developing a Low Carbon Fuel Standard (LCFS), which would reduce the carbon intensity of California's transportation fuels by at least 10% by 2020 and 20% by 2035 as called for by Governor Schwarzenegger in Executive Order S-01-07. LCFS will incorporate compliance mechanisms that provide flexibility to fuel providers in how they meet the requirements to reduce greenhouse gas emissions. CARB estimates the Low Carbon Fuel Standard will reduce California's projected 2020 transportation emissions by 6.7%.<sup>48</sup>

### ***California's Renewable Energy Portfolio Standard (RPS) (SB 1078)***

Established in 2002 in Senate Bill 1078, the RPS program requires electricity providers to increase the portion of energy that comes from renewable sources to 20% by 2010 and to 33% by 2020. CARB estimates the RPS will reduce California's emissions from electricity use by 15.3% in 2020.<sup>48</sup>

### ***Assembly Bill 1493 (Pavley)***

Assembly Bill 1493 (Pavley), signed into law in 2002, requires carmakers to reduce greenhouse gas emissions from new passenger cars and light trucks beginning in 2011. The California Air Resources Board adopted regulations in September 2004 that create two phases of increasingly stringent standards for car manufacturers between 2009 and 2020. The first phase, which has already been adopted, is expected to reduce California's projected 2020 transportation emissions by 7.3%.<sup>48</sup>

### ***Heavy-Duty Vehicle Emission Reduction (Aerodynamic Efficiency) Standard.***

Outlined in the AB 32 Scoping Plan, this reduction requires heavy-duty trucks and trailers to be retrofitted with the best available technology and/or CARB-approved technology to improve fuel efficiency, including devices that reduce aerodynamic drag and rolling resistance. The requirements apply to California and out-of-state registered trucks that travel to California. This measure requires in-use trucks and trailers to comply through a phase-in schedule starting in 2010 and achieve 100% compliance by 2014.<sup>20</sup>



### ***California CAP AND TRADE Program***

The cap-and-trade program is a centerpiece of the state's landmark effort to cut greenhouse gas emissions to 1990 levels by 2020, and accounts for one-fifth of the planned cuts under AB 32. It would cover 600 power plants, factories, and other industrial facilities, which account for 80% of California's greenhouse gas emissions<sup>31</sup>



The cap-and-trade program was scheduled to begin operating on January 1, 2012, but in February 2011, a California judge's ruling put the move on hold until CARB completed a compliant CEQA analysis of alternative measures to cut greenhouse gases other than carbon trading.<sup>14</sup> Though the program has broad support in the environmental community, several neighborhood organizations and environmental justice groups that focus on localized pollution, have been fighting the program in court saying it would allow industrial plants to avoid installing the strictest pollution controls. CARB is drafting an analysis of alternatives, and will delay the program until 2013.<sup>29</sup>

## State-Imposed Mandates to Local Governments

The California legislature has recently imposed several laws in various sectors directing local governments to address climate change. Many of the City's Climate Action Plan greenhouse gas reduction measures derive from these mandates.

### CURRENT AND LONG-RANGE PLANNING

#### ***Sustainable Communities Strategy (SB 375)***

SB 375 (2008) revises the process of regional transportation planning by metropolitan planning organizations (MPOs), which are governed by elected officials from local jurisdictions. It seeks to reduce emissions by linking transportation funding to land use planning. It requires the Metropolitan Planning Organizations to create sustainable communities strategies in their regional transportation plans to achieve each region's greenhouse gas emissions reduction target. The statute calls on CARB to establish regional transportation-related greenhouse gas targets and requires MPOs to develop a regional "Sustainable Communities Strategy" (SCS) of land use, housing, and transportation policies that will move the region towards its GHG target, or an "Alternative Planning Strategy" (APS) if the SCS cannot achieve the GHG reduction goals. It is envisioned that emission levels would be reduced through reduced vehicle miles traveled and sprawl, and promotion of higher density. The statute stipulates that transportation investments must be consistent with the Sustainable Communities Strategy and provides CEQA streamlining for local development projects that are consistent with the Strategy.<sup>26</sup>

While SB 375 operates at a local level, it is linked with a regional scale vision. SB 391 (2009) requires that by December 31, 2015, Caltrans will complete the California Interregional Blueprint and California Transportation Plan that integrates state transportation plans, regional transportation plans, and regional blueprint planning to plan a multi-modal transportation system needed to achieve AB 32 targets.<sup>6</sup>

**The AB 32 Scoping Plan estimated that the state's emissions will be reduced by an estimated 1% by 2020 as a result of SB 375.**

#### ***CEQA – Global Warming Guidelines (SB97, Dutton, 2007)***

SB 97 required the Office of Planning and Research (OPR) to prepare guidelines for the feasible mitigation of GHG emissions, as required by CEQA, including effects associated with transportation and energy consumption. The guidelines created new requirements for CEQA documents to identify and mitigate for GHG emissions. The bill also tasked the CARB to create energy-use and transportation thresholds for CEQA reviews which, if exceeded, would require local governments to account for greenhouse gas emissions when reviewing project applications.<sup>26</sup>

Pursuant to law, the State Office of Planning and Research updated CEQA guidelines to require analysis of climate change in CEQA documents, which came into effect in March 2010. Many jurisdictions are finding that climate change impacts from local government activities are "significant" under CEQA, and

are identifying emissions reduction targets and Climate Action Plans (ICLEI Milestones Two and Three) as mitigation measures to reduce climate change impacts to less-than-significant levels.<sup>26</sup>

## BUILDING DESIGN AND OPERATION

### ***California Green Building Standards Code (CALGreen, Title 24, Part 11)***

As part of the compliance with Assembly Bill 32, the State of California has developed a new, mandatory California Green Building Standards Code, (CALGreen), which took effect on January 1, 2011, and is applicable to most new residential, commercial, office and institutional buildings; it does not apply to remodels. CALGreen establishes standard and compulsory minimum green building regulations to reduce construction waste, increase building energy efficiency, and reduce indoor water use, that affect all construction state-wide. It is distinct from Part 6 of Title 24, the California Energy Code.

California's "green building" code goes beyond energy performance to encompass all sorts of things like reduced construction waste, water conservation, non-toxic sealants, renewable materials, etc. By contrast the California energy standard (also known as Title 24, Part 6) focuses primarily on promoting more energy-efficient buildings, and only considers the fixed infrastructure: building envelope, heating and cooling, water heating, and some lighting restrictions.<sup>50</sup>



Examples of CALGreen standards for new construction include:

- 20% mandatory reduction indoor water use and 50% mandatory reduction in landscape irrigation accomplished through performance or prescriptive measures;
- 50% mandatory diversion of construction waste from landfills; an



- Mandatory quality inspections of energy systems, such as air conditioners, for non-residential buildings over 10,000 square feet.

**The Natural Resources Agency added a new provision, Section 15183.5 that became effective in March 2010, which provides a framework for plan-level greenhouse gas emissions reduction plans. An adequate plan must:**<sup>26</sup>

- **Quantify existing and projected community-wide greenhouse gas emissions over a specified time period;**
- **Establish greenhouse gas emissions reduction targets over the life of the plan which, if achieved, would render the community's greenhouse gas emissions to be less than significant;**
- **Identify and analyze the greenhouse gas emissions resulting from specified activities in the community;**
- **Identify a suite of specific, enforceable measures that, collectively, will achieve the emissions targets;**
- **Establish a mechanism to monitor the plan's progress and to require amendment if the plan is falling short; and,**
- **Be adopted in a public process following environmental review.**

***Building Energy Audit (at time of Sale, Lease or Refinance). California AB 1103 (2007)***

Unlike California's stringent Title 24 building energy efficiency codes that regulate standards for commercial construction and renovations, AB 1103 comes into play when a building is sold, leased in whole, or refinanced. Along with the usual financial and transaction disclosures, it requires that building owners provide 12 months of energy-use information. The initial compliance date begins January 1, 2012.

AB 1103 requires non-residential business owners to input energy consumption and other building data into the Environmental Protection Agency's ENERGY STAR Portfolio Manager System, which generates an energy efficiency rating for the building. Ratings are from 1 to 100, with 100 being the most energy efficient. A rating of 50% means that the building performs at the midpoint when compared to similar buildings. A higher rating means lower energy costs, decreased occupancy costs, and potentially, increased building valuation.

## TRANSPORTATION

### ***Complete Streets (AB 1358, Leno, 2007)***

AB 1358, the *Complete Streets Act*, requires cities and counties to plan for a balanced multi-modal transportation network that meets the needs of all users of streets, roads, and highways, including motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation. AB 1358 furthers *Merced Vision 2030 General Plan* principles to create walkable neighborhoods, foster distinctive, attractive communities with a strong sense of place, and provide a range of transportation choices.

### ***eTRIP / Rule 9410 – Employer Based Trip Reduction***

The eTRIP Rule (Rule 9410, Employer Based Trip Reduction), was adopted by the San Joaquin Valley Air Pollution Control District Governing Board on December 17, 2009. The eTRIP Rule requires larger employers to establish an Employer Trip Reduction Implementation Plan (eTRIP) to encourage employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes.

Rule 9410 is applicable to employers within the San Joaquin Valley Air basin with at least 100 eligible employees, and includes the City of Merced. The employer must create an employer trip reduction plan submitted by September 1, 2011, with resubmission requirements. The employer must begin commuter verification submissions by January 1, 2014. Annual reports of the ETRIP and commuter verification must be first submitted by March 31, 2015, and every year thereafter.



## WATER CONSERVATION

### ***Model Water Efficient Landscape Ordinance***

AB 1881 (Laird, 2006) directed DWR to draft a model water efficient landscape ordinance and required local agencies to adopt it by January 2011. The law demands local governments to adopt a model ordinance that requires a building or landscaping permit, plan check, and a professional design review of private or developer-installed single or multifamily landscaping of 2,500 square-feet or more, or homeowner done or homeowner-hired landscapes of 5,000 square-feet or more.

(NOTE: AB 1881 followed AB 2717, Laird, 2004, that required DWR to conduct a survey of Local Agency success in complying with AB 325, which required all local jurisdictions to adopt a landscape water conservation ordinance by 1993).

### ***Water Conservation Bill of 2009 (SBx7.7, Steinberg, 2009)***

In 2008, then Governor Schwarzenegger introduced a seven-part initiative to reduce water use. The first step of that initiative, the Water Conservation Bill of 2009, was enacted to increase water use efficiency, and requires urban water suppliers to reduce the statewide average per capita daily water consumption by 20 percent by December 31, 2020. It also requires that the State make incremental progress toward

**The Water Conservation Bill of 2009 also takes climate change into account and will eliminate an estimated 1.4 million metric tons of greenhouse gas emissions per year.<sup>30</sup>**

this goal by reducing per-capita water use by at least 10 percent by December 31, 2015.<sup>7</sup> Other provisions include the following, among others: 1) by July 1, 2011, each urban retail water supplier in its *Urban Water Management Plan* must develop water-use targets, and an interim 2015 water use target using specified methods; and 2) effective 2016, urban retail water suppliers that do not meet the water conservation requires established by SBx7. 7 are not eligible for state water grants or loans.

The City of Merced, using Method 1 of SBx7.7, has 2015 water use interim target of 279 annual daily per capita water use (gpcd), and a 2020 target of 248 gpcd. In order to reach these targets, the City will need to account for 8,126 acre-feet per year (afy) of water conservation savings by year 2020.<sup>8</sup>

## **WASTE MANAGEMENT**

### ***Commercial Recycling***

An element of the Scoping Plan for AB 32 that directly affects the City of Merced is the Mandatory Commercial Recycling Regulation. The effective date for jurisdictions and businesses to implement commercial recycling programs is July 2012. The proposed mandatory commercial recycling regulation will reduce greenhouse gases by focusing waste reduction within the commercial sector and requiring businesses, some multifamily dwellings, and public entities to recycle. Recycled materials can include, but are not limited to, paper, plastics, glass, metals, cardboard, organics, food waste, and construction and demolition materials.

**The State's GHG emissions reduction goal for waste reduction is estimated to be 5 million metric tons of carbon-dioxide equivalent per year.**

## Key Supportive State Regulations

The State has adopted key legislation to assist local governments to achieve state and local energy efficiency goals.

### ***AB 811 / PACE (2007)***

AB 811 (2007) authorizes all local governments in California, if they so choose, to establish special districts that can be used to finance voluntary energy efficiency, solar, or other renewable energy improvements to homes and businesses in their jurisdiction. Residential property assessed clean energy (PACE) programs were local governments' best hope for implementing renewable energy and weatherization retrofits. As a result of opposition by the Federal Housing and Financing Agency (FHFA), federal regulators have effectively put most of the local programs dealing with residential properties on hold, however. It may take additional federal legislation to get residential programs fully back on track.

<sup>26</sup> While some communities have managed to press forward with similar programs targeting the commercial sector, the legal fight to restore PACE continues.<sup>23</sup>

In July 2011, the PACE Protection Act was introduced to Congress that would allow cities and counties to help property owners finance energy efficient and renewable energy modifications for their homes and commercial buildings without any government subsidies or taxes.<sup>28</sup>

### ***SB 83 / Vehicle Registration Fee Funding Source***

Senate Bill 83 allows transportation planning agencies to place a ballot measure before the voters of a county to authorize an increase in the vehicle registration fee up to ten dollars per year per vehicle for transportation-related projects and programs. Eligible transportation projects include the following and could help to reduce GHG emissions.

- programs and projects identified in the regional transportation plan;
- projects and programs to manage congestion including, for example, high-occupancy vehicle or high-occupancy toll lanes;
- improved transit services through the use of technology and bicycle and pedestrian improvements;
- improved signal coordination;
- traveler information systems;
- highway operational improvements;
- local street and road rehabilitation; and,
- transit service expansion.

Merced County Association of Governments (MCAG) estimates that if passed, this measure could raise \$1.9 million dollars every year. MCAG would have to prepare an expenditure plan to determine what projects would use this funding. In 2009, the MCAG Board held a public meeting on the item, but did not take any action on it.

## State Trends

Though the term “Climate Action Plan” is new, the establishment of energy efficiency programs and efforts to conserve our natural resources are well established community and government-related actions. For example, in 1988, under AB 4420 (Sher), the California Energy Commission (CEC) was directed to prepare and maintain the state’s inventory of greenhouse gas emissions and to study the effects of GHGs. The CEC has been linking land use and energy for a number of years, and through its assessments, forecasts, and policy-making abilities, has identified state-desired energy-related funding, partnership, and regulatory actions. The CEC develops an Integrated Energy Policy Report (IEPR) to craft state energy policies. Recent notable outcomes of these reports include:<sup>27</sup>

- Expand efforts to provide technical and financial assistance to regional agencies and local governments to facilitate energy efficiency planning and development;
- Utilities should be directed to play an active role with regional and local governments to encourage climate-friendly and energy-efficient development in their service areas; and,
- Improvements were needed by local governments, including an energy element in their general plans.

### **Caltrans Deputy Directive 64**

**In 2008, Caltrans re-issued a policy to support biking and walking on State roads – Deputy Directive 64. It says, the Department views all transportation improvements as opportunities to improve safety, access and mobility for all travelers in California, and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation systems. The directive applies to all planning programming, design, construction, operations, maintenance activities, and products on the State highway system.<sup>36</sup>**



# Merced Responds

## Introduction

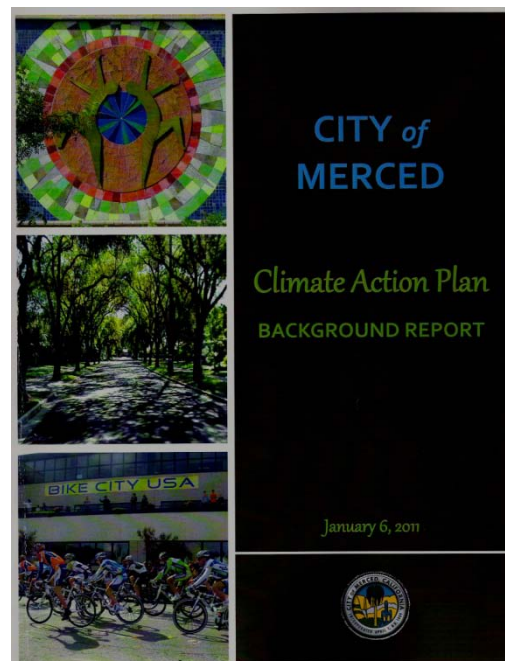
In November 2009, the City Council accepted Energy Efficiency and Conservation Block Grant funds from the Federal Department of Energy to undertake several projects to increase energy efficiency. One of these projects was the drafting of a Climate Action Plan (CAP). Work by City Staff on Climate Action Planning began in January 2010, and focused on drafting the *City of Merced Climate Action Plan Background Report*, which included the City's first Greenhouse Gas Emission Inventory. The Background Report was completed in January 2011 and helped frame the next steps in the process, selecting a greenhouse gas reduction target and drafting the Climate Action Plan. The adoption of this Climate Action Plan will be followed by implementation of GHG reduction strategies and actions.

## 2008 Greenhouse Gas Emission Inventory

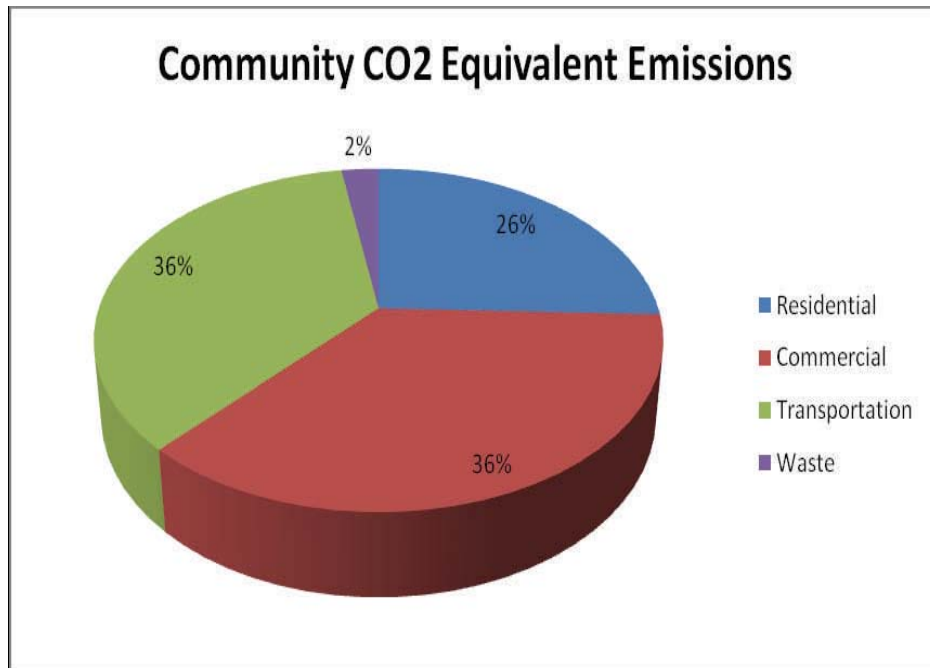
In 2010, the City of Merced prepared a greenhouse gas (GHG) emission inventory using 2008 as the baseline year. This inventory identified the major sources of emissions from the City of Merced including emissions from local government based sources as well as from the community as a whole (see Chapter 8 of the *City of Merced Climate Action Plan Background Report*). The report shows the amounts and sources of GHG emissions and therefore, where staff and policymakers can target emission reduction activities in a manner that would make significant progress toward adopted targets.

## MERCED'S GHG EMISSION FORECAST

Through the completion of a local emissions study, or "greenhouse gas inventory," the City of Merced has determined emissions levels for the community as a whole and for City of Merced government operations. The full emissions inventory is located in the Climate Action Plan Background Report for the City of Merced, dated January 2011. Community-wide emissions represent the sum total of emissions produced within City limits as well as emissions resulting from electricity use within the jurisdiction, even if said electricity is generated elsewhere. In this way, the community-wide figures represent all emissions for which the community is responsible.

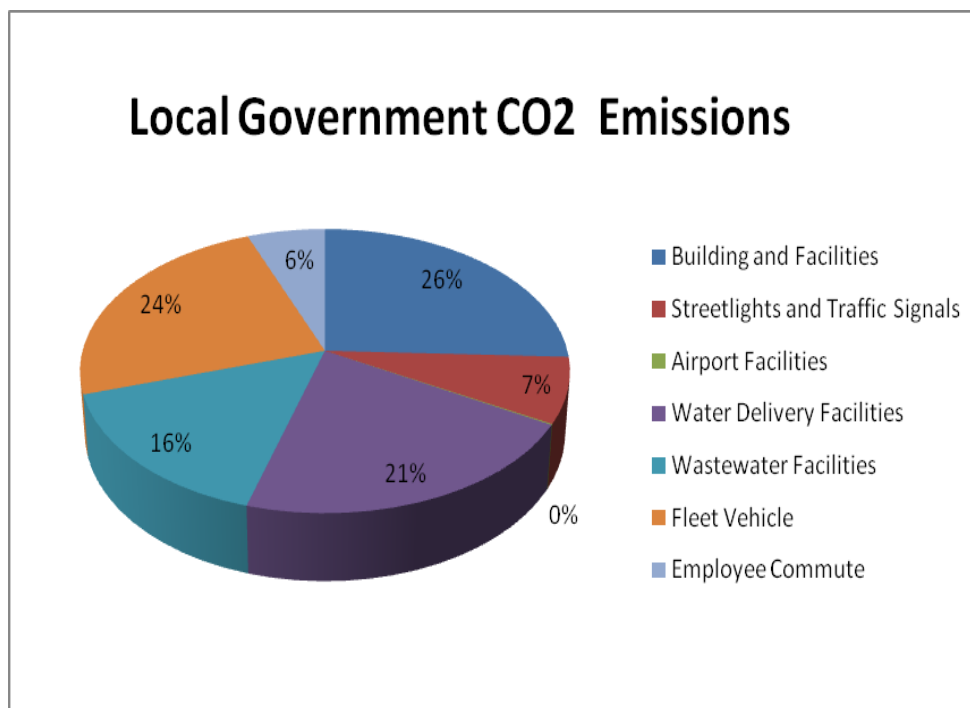


**Chart: Merced Community-Wide GHG Emissions**



Emissions from the City are embedded within the community-wide totals. For example, emissions from government buildings are included in the “Commercial” sector and emissions from City fleet vehicles are included in the “Transportation” figure above. Government operations are therefore a subset of total community emissions, and accounted for 4% of total community emissions.

**Chart: City of Merced Government Operations GHG Emissions**



## ESSENTIAL FINDINGS AND IMPLICATIONS OF THE GHG EMISSION INVENTORY

### **Findings:**

- 26% of the community's emissions originated from buildings.
- Transportation and Building Sectors produce the largest amounts of GHG emissions in the community as a whole, with 62% of the emissions originating from existing residential, commercial, and industrial buildings.
- Electricity is a major source of energy for buildings.
- The "Community" sector, which includes "Local Government" emissions, emitted approximately 405,748 metric tons of CO<sub>2</sub> equivalent emissions in 2008. By comparison, the "Local Government" sector, a subcomponent of the "Community," emitted approximately 17,655 metric tons of GHG emissions in 2008, which represents approximately 4% of the emissions produced by the "Community," a ratio that is normal for many cities and counties.
- Emissions from "Local Government" are under the control of a single entity, the City of Merced.

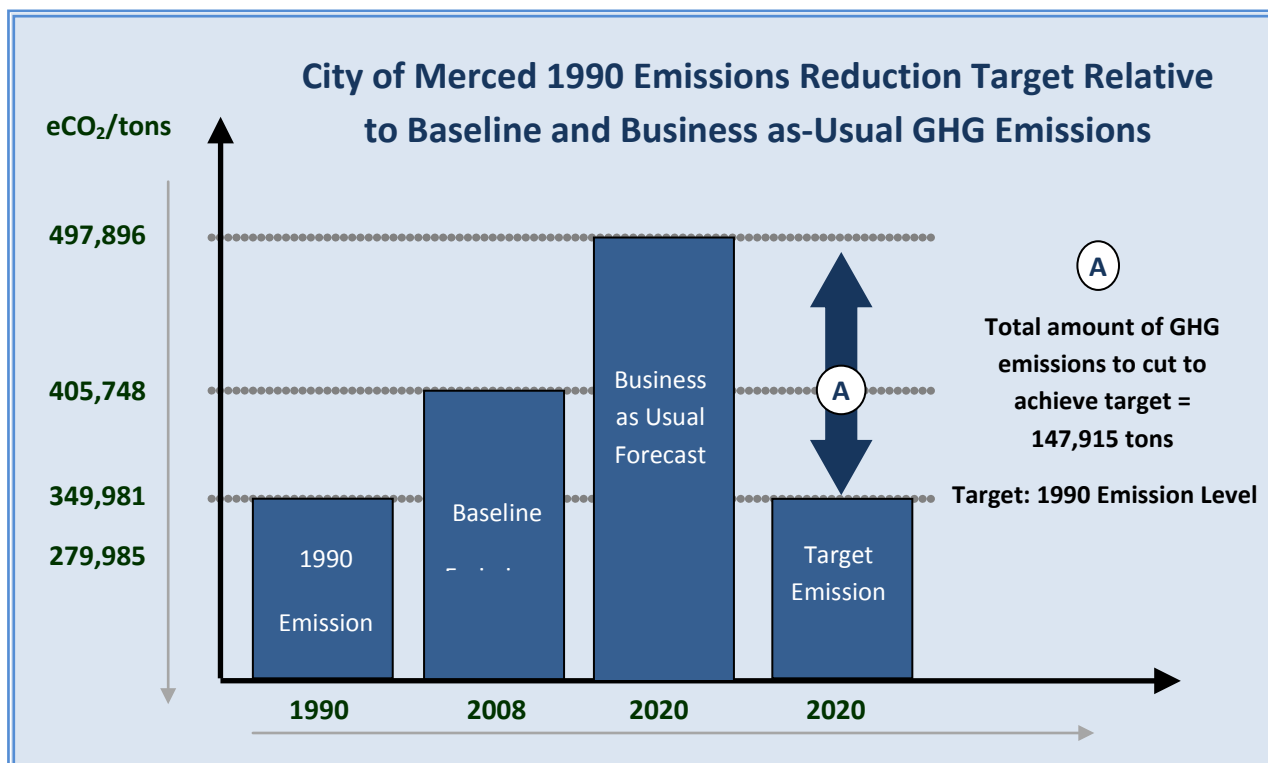


### **Implications:**

- The greatest potential for reducing emissions will result in measures that affect existing buildings.
- While the ability of the City to reach the "Local Government" target is much greater than the ability of the "Community" to reach its target, it only represents a small fraction of community-wide GHG emissions.
- Targeting GHG reductions by implementing energy efficiency and conservation measures would likely yield large emission reductions.

## MERCED'S EMISSION FORECAST

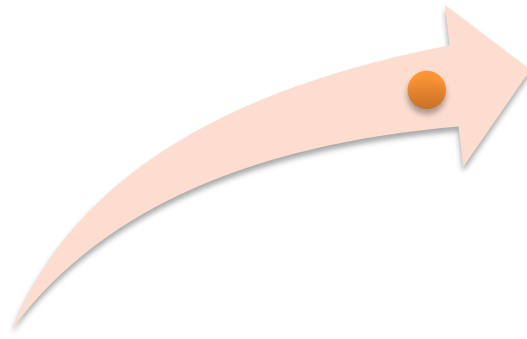
The City has also completed an emissions forecast based on projections of current data and expected future trends. The emissions forecast is a “Business-as-Usual” forecast, a scenario estimating future emissions levels if no further local action (i.e. projects within this Climate Action Plan) were to take place.



## Merced's Greenhouse Gas Reduction Target

On February 22, 2011, the Merced City Council adopted greenhouse gas reduction parameters, targets, and an approach to drafting the City's Climate Action Plan. The City Council set two broad parameters for the CAP: 1) address emissions from government-based facilities and community-based emission sources; and, 2) address the long-term, but include a phasing plan that recognizes short-term and near term approaches to meet the long-term goal. The City Council did not specify a specific year or goal for the long-term. For purposes of this CAP, 2020 is regarded as the long-term goal.

The City Council also directed Staff to work with the Committee to identify ways to reduce GHG emissions to 20% below 1990 levels by 2020 for government-based facilities and the Community as a whole. The numeric target provides a goal toward which to strive and against which to measure progress. It allows the City to quantify its commitment to reducing GHG emissions, demonstrating that the jurisdiction is serious about its commitment and systematic in its approach. On June 4, 2012, the City Council adjusted this target to 1990 levels by 2020.



### **Merced's Target: 1990 Levels by 2020**

The combination of measures that the City of Merced has already implemented, are currently planned, and are presented through this Climate Action Plan, are designed to achieve the 2020 targets. Reductions rely on the best information currently available pertaining to population forecasts, future changes to building codes, and vehicle fuel efficiency standards among other information.



# Sustainable Merced

## Introduction

The UC Davis Sustainable Transportation Center recently published, *“Achieving Sustainability in California’s Central Valley,”* and identified Merced as one of several of its transitioning cities. The report analyzed the barriers and catalysts to sustainable growth and development in Central Valley cities. A finding of the report states: “State level policies should place high priority on “transitioning cities” that will be making important future (development) decisions, and that “transitioning cities,” which are not hampered by a history of poor development,” will allow regional planning processes, such as the San Joaquin Valley Blueprint, AB 32, and SB 375 to have more leverage. Past planning goals to form compact urban boundaries and to implement urban villages have enabled the City of Merced to capitalize on new opportunities of the “new normal.”

## Merced - Staged for Sustainability

Looking to the future, the City’s alignment with the state’s sustainability objectives, as well as the placement of UC Merced and a future high speed rail station in Downtown Merced will result in federal and state funding for transportation projects and short and long-range planning efforts, which in turn will benefit the citizens of Merced through renewed economic opportunities and development of livable communities.

## UC MERCED

According to its *“Sustainability Strategic Plan,”* UC Merced, from the beginning, was envisioned to be a campus shaped by sustainability, possessing the potential to pilot sustainability strategies that can be a model for other growing communities, both regionally and globally.<sup>2</sup> Such strategies include the following efforts:



### ***Sustainability Strategic Plan***

The 2010 Sustainability Strategic Plan represents UC Merced's first comprehensive presentation of its sustainability vision, and includes eleven sustainability goals with critical objectives and milestones for reaching each of these goals. The Plan is a roadmap to adopt sustainability practices across all campus operations.<sup>2</sup>

### ***Triple Net Zero Commitment***

The 2009 update to UC Merced's Long Range Development Plan (LRDP) established a "triple zero commitment," requiring the campus to produce its power renewably (known as "zero net energy"), eliminate landfill wastes (zero-net wastes), and achieve climate neutrality (zero net emissions footprint) by 2020.<sup>2</sup>

### ***LEED (Leadership in Energy and Environmental Design) Buildings***

UC Merced boasts six LEED Gold buildings, 2 LEED Silver buildings and anticipates receiving certification for the nation's first LEED Gold child care facility built with modular construction. The 2009 Long Range Development Plan establishes a minimum of LEED Gold for all future buildings, with LEED Platinum certification as a target.<sup>2</sup>

### ***Public Engagement***

UC Merced faculty, students, and staff are actively engaged in community services, and support and provide leadership in many local organizations. More than half of the campus' 100 student clubs and more than 25 percent of all students actively participate in or facilitate community service programs.<sup>3</sup> (See Chapter 4 of the Climate Action Plan Background Report, "*Community Green Goals, Policies and Activities*").

## **HIGH SPEED RAIL**

The planned High Speed Rail Station has the potential to reduce GHG emissions through reconstruction projects, provision of an alternative long distance travel mode, and infill development.

## **SAN JOAQUIN VALLEY BLUEPRINT**

The San Joaquin Valley Blueprint is a long range vision for a more efficient, sustainable, and livable future for the Valley. It is made up three elements: (1) a 2050 growth scenario diagram that identifies areas of existing development, new development, and future regional transit and highway improvements; (2) a Valley-wide average target density of 6.8 units per acre for new residential growth to the year 2050; and (3), the Blueprint reflects the combined visions of the eight Regional Planning Agencies for the future through a set of 12 Smart Growth Principles. These principles are based on the core values of Valley residents, identified early in the Blueprint process and



will continue to be used as a basis of future Blueprint planning and implementation. Six of these principles overlap with outcomes of GHG reduction efforts.

- Create Walkable Neighborhoods
- Encourage Community and Stakeholder Collaboration
- Foster Distinctive, Attractive Communities with a Strong Sense of Place
- Provide Mixed Land Uses
- Provide a Variety of Transportation Choices
- Strengthen and Direct Development Towards Existing Communities

Blueprint Planning efforts are highly regarded as probable templates for creating Sustainable Community Strategies (SCS) in the next generation of Regional Transportation Plans, giving the Blueprint Plans a greater role in regional and local land use planning.

## Merced's Sustainability Accomplishments

The City has and will continue to reduce GHG emissions through several significant programs. Chapter 3 of the Background Report, *"City of Merced Green Goals, Policies and Activities,"* lists 88 of these programs. Key programs are summarized below.

### MERCED VISION 2030 GENERAL PLAN

As part of the Climate Action Plan Background Report, City Staff assessed existing policies of the *Merced Vision 2030 General Plan*, adopted in January 2012, to gauge its alignment with current planning trends relative to Climate Action Planning, such as smart growth, transit-oriented development, and mixed-use development. In keeping with its namesake, the vision of the General Plan aligns substantially with these concepts (please see Chapter 3 of the Background Report, *"City of Merced Green Goals, Policies and Activities,"* for more details). Key themes of the *Merced Vision 2030 General Plan*, which are consistent with efforts to reduce greenhouse gas emissions, include:

**Smart Growth Policies** – The City of Merced is a "Smart Growth" leader in the Central Valley as evidenced by inclusion of "mixed-use urban villages" in the *Merced Vision 2030 General Plan*.

**Infill Development Policies** – The City's General Plan recognizes the financial and quality of life aspects of developing infill sites.

**Compact Urban Growth** - Urban growth occurs as redevelopment, infill, or urban expansion. The City's General Plan emphasizes compact urban growth and infill over urban expansion, but recognizes that large scale redevelopment is a less likely method of accommodating population demands. Although the *Merced Vision 2030 General Plan* update includes a large potential future growth area, Urban Expansion policies are in place to limit urban expansion. The goals of the General Plan Urban Expansion Chapter are: 1) a compact urban form through infill and controlled annexations; 2) preservation of agriculturally significant areas; and 3) efficient urban expansion (refer to urban expansion policies UE-1.1, UE-1.2, UE-1.3, UE-1.4, UE-1.5, and UE-1.6.).

## WATER SUPPLY AND CONSERVATION EFFORTS

The Mission of the City's Water Division is to provide the City of Merced with a continuous supply of clean and safe drinking water, while promoting water conservation. These goals are implemented through several conservation programs (listed below), and through collaboration with other water supply agencies to manage regional water resources including the Merced Area Groundwater Pool Interests (MAGPI) and Integrated Regional Water Management Plan (IRWMP).

- Water Conservation Public Information Program
- Water Conservation School Education Program
- Water Waste Prohibition Program
- Leak Detection and Repair Program
- Water Metering Program
- Residential Plumbing Retrofit Program



## WASTE MANAGEMENT EFFORTS

The annual waste tonnage from November 2009 to October 2010 was 62,384, which was comprised of 3,536 tons of recycling materials, 9,516 tons of green waste, and 49,332 tons of refuse. The City's Curbside Recycling Program allows clean paper/cardboard, clean and empty glass bottles, clean and empty tin/aluminum cans and plastics in a jug or bottle form to be placed in recycling containers. The City's curbside recycling program does not include plastic bags, polystyrene, aseptic containers or batteries. The City promotes commercial recycling and has 65 commercial customers that are using City containers to recycle cardboard and/or clean paper. The Merced County Landfill has a compost permit good for green waste compost, not including food waste.



## FLEET MANAGEMENT

The City of Merced's green fleet currently inventories 7 Ford Escape Hybrids, 5 CNG powered garbage trucks, 7 CNG pickup trucks. In July 2011, the City was notified as an approved grant recipient totaling \$609,086 to purchase 22 additional hybrid automobiles which would bring the total alternate fuel inventory to 41, which is 13.8% of the total number of motorized vehicles. It should also be noted that all larger diesel powered trucks in the existing fleet either meet the 2010 EPA Emission Standards or are retrofitted with diesel particulate filters (DPFs) which greatly reduce diesel particulates normally released into the air.



## BICYCLE TRANSPORTATION AND PLANNING

The City of Merced has a strong Bicycle Planning program as evidenced by general plan policies, an established Bicycle Advisory Committee, and continued improvement of bicycle facilities. In February 2009, the City Council established the Bicycle Advisory Committee to serve as an advisory body to the City Council on matters having to do with bicycle transportation within the City of Merced. The City was also awarded the League of American Bicyclists' Bike Friendly Community Program *Honorable Mention Award* in 2010.

## EMPLOYEE TRIP REDUCTON PLAN

The City of Merced City Council adopted Resolution 2010-53 authorizing the City to become a Healthy Air Living (HAL) Partner with the San Joaquin Air Valley Pollution Control District. An immediate action of the resolution was to form the "Alternative Transportation Team," whose primary goal is to increase employee walking, biking, and carpooling to work. This goal will be reached through an education and incentive program that includes a monthly HAL Newsletter.



# Climate Action Plan Values

## Introduction

Taking action on climate change provides tangible benefits for citizens today – and ensures that future generations will have access to the resources that support healthy, prosperous, and livable communities. The Merced Climate Action Plan seeks to reduce GHG emission within this larger framework of sustainability.

## Benefits of Climate Protection Measures

In addition to reducing GHG emissions, Climate Action Plan strategies also reduce traffic congestion, reduce air pollution, provide job opportunities, create savings opportunities, and help to create more vibrant, livable communities for Merced’s citizens and businesses. In identifying GHG reduction measures for the CAP, the Committee and City CAP Team took care to be aware of such benefits in order to deploy efficient use of City resources. Co-benefits include:

### HEALTHY CITIZENS

Climate change mitigation activities, particularly those related to transportation, help to clean the air by reducing vehicle emissions. These strategies ultimately create less air pollution, which results in fewer air quality-related public health impacts, such as asthma and other respiratory ailments. Reducing global warming pollutants also helps cities comply with federal air quality regulations and preserves federal funding for local projects.



## A LIVABLE ENVIRONMENT AND COMMUNITY

Climate change strategies, particularly those related to air, water, and land resources, help to maintain life sustaining natural resources in quantities and quality for use by future generations. For example, water conservation strategies, such as reducing water demand also reduces energy usage and associated GHG emissions from water-pumps. Designing our roadways for multiple users can reduce storm water flows and water pollution, and encourage bicycling and walking. Enhanced urban forests beautify neighborhoods and reduce building cooling costs and associated GHG emissions. Potential negative impacts from air and water pollution generated from solid waste landfills are reduced through increased efforts to reduce, reuse, and recycle materials.



## RENEWABLE ENERGY RESOURCES / A PROSPEROUS ECONOMY

Decreased energy costs and the provision of new energy services and technologies give local government and private firms a competitive edge. Demand for energy efficient products and services and for new or alternative energy technologies expands local business and creates local jobs. Actions that reduce GHG emissions can also reduce electricity and fuel use, thereby reducing energy costs for citizens, businesses, and local governments, and expanding their disposal incomes, bottom line, or budgets.

## COMMUNITY ENGAGEMENT

Efforts to reduce GHG emissions will be maximized by the strengthening and expansion of community partnerships. While the impetus for this increased level of activity may originate from Climate Action Planning efforts, a renewed platform of community spirit, activism, and civic pride will arise to benefit a wide array of public and private programs and activities.



## Climate Action Plan Values and Goals

Recognizing the importance of these co-benefits and their relationship to greenhouse gas reduction, the Merced Climate Action Plan is framed by four values that support healthy, prosperous (job growth and increased savings), and livable communities. Each value has a unique set of goals, strategies, and actions that are further defined in PART 4 of the CAP.

- Healthy Communities
- Quality Natural Resources
- Clean Energy Resources
- Leaders and Partners





# PART 3: Capacity Assessment

Capacity to Implement Merced's Climate Action Plan

## PART 3: CAPACITY ASSESSMENT

PART 3 of the City of Merced Climate Action Plan describes the capacity of the local community and government to implement a Climate Action Plan. It identifies the obstacles to achievement, as well as the routes upon which subsequent steps should be taken to implement the recommended GHG emission reduction strategies and actions that are listed in PART 4 of the CAP.

PART 3 includes the following topics:

- Local Opportunities and Challenges
- Leadership Models
- Financing and Budgeting
- Community Partners / Agents of Change

“The leadership model used to deploy the Climate Action Plan will drive which strategies and actions can be implemented.”

– **Lisa Kayser-Grant**

Member of the City of Merced Climate Action Plan Advisory Ad-Hoc Committee



# LOCAL OPPORTUNITIES AND CHALLENGES

## Opportunities

Opportunities to implement the CAP abound in Merced, and range from education, physical geography, and long-range planning efforts already in progress, and include:

- UC Merced provides educational, research, innovation, and leadership avenues about creating sustainable communities, and will be a valuable partner in planning and implementing the CAP;
- The “Urban-Village” policies of the *Merced Vision 2030 General Plan* are representative of the direction the State of California is beginning to direct local planning through drivers such as SB 375 and AB 32. Merced is currently ahead of the curve and positioned to benefit from financial resources, such as the recently awarded grant for preparation of the Bellevue Corridor Community Plan, a required precursor plan to development in Northwest Merced;
- The “High-Speed Rail Station” will be an impetus for redevelopment projects in Merced’s Downtown area. Redevelopment in the Downtown area will be a boon for the area’s quality of life and business climate. At the same time, it will become a hub of regional transportation-oriented development;
- A re-tooled construction industry can find work rehabilitating and constructing energy-efficient buildings;
- Merced’s geography is conducive to some sustainability efforts. For example, its flat terrain is suitable to use of bicycle transportation and its sunny climate is suited to use of solar power;
- Merced’s water source has traditionally been groundwater, which requires pumping and associated pumping costs, the Merced River gravity-feed surface water provides an alternative source of water for some uses;
- Merced has numerous existing Community Partners for Sustainability; and,
- Changes in the housing market open up opportunities to dialog with members of the development community about sustainable approaches to development.

## Challenges

While challenges may initially pose obstacles to implementation of a plan, once solutions are presented and progress is made to reverse the negative effect, these challenges have the potential to become key opportunities leading to successful implementation. For example, though public support for a Plan may initially be low, strategic public outreach has the potential to result in a positive and supportive public perception of the Plan. Facing challenges positively is a strategy that can easily become another opportunity for the plan.

Other challenges include the following:

- The local economy and associated unemployment and low wages become strong reasons to implement measures that will reduce utility bills. The long-term savings and reduction of cost-of-living will have dramatic positive effects on the quality of life for many Mercedians.
- The large growth boundary of the *Merced Vision 2030 General Plan* necessitates the Planning Commission and City Council to balance unchecked growth by its equally compelling policies of infill development, formation of a compact urban form, and application of urban expansion policies.
- City Staff and financial resources are limited; there is little room for new or expanded programs. However, the strain on resources is precisely the reason why sustainability programs should be supported. Sustainable methods of growth and associated provision of services are economically sound methods of development.
- While language barriers can limit the success of public outreach efforts, deploying methods to communicate with underrepresented groups involves greater numbers of citizens and a correlative increase in ideas, solutions, and potential for success of the plan.
- The majority of Merced's housing stock was constructed prior to building codes that required high levels of energy efficiency. Though a great amount of GHG emissions come from this housing stock, it also provides a mother-lode of emission reduction potential. A similar "challenge-opportunity" relationship exists with commercial and Industrial buildings.



# LEADERSHIP MODELS

## Introduction

Successful implementation of the CAP and associated GHG reduction target hinges upon community engagement, government leadership, and their support of the plan. The style of local governance and leadership mechanisms take various forms, and range from simple government-focused programs to multi-faceted community-wide programs, and may include the following tasks:<sup>15</sup>

- Apply for rebates for energy-related projects
- Track energy usage
- Facilitate energy efficiency and renewable energy projects in local government facilities
- Implement programs to comply with state mandates
- Provide leadership and support practical solutions of sustainability
- Work with City Departments to jointly implement projects
- Monitor greenhouse gas reduction progress
- Promote and provide information to the community

## Types of Leadership Models

Leadership models can be modified and/or used in concert with each other to craft a program that is suited to the City of Merced. One possible way to enhance limited City resources is to use volunteers or interns. Interns could either operate a well-defined program or support internal City Staff efforts to implement Department programs.

### FOCUSED PROGRAMS

This model describes the approach currently deployed by the majority of local governments, including Merced, which typically involves staff members that implement a focused program, for example, a water conservation or recycling specialist, without benefit of a coordinated effort. While there may be public outreach components, there is limited coordination between programs and the staff member may have other unrelated duties. Existing focused programs in Merced include:

### ***Water Conservation Specialist, City of Merced, Public Works Department***

This position is responsible for coordinating water conservation activities as well as issuing informational handouts, notices, and citations to customers for violating the City's water conservation ordinances.<sup>8</sup>

### ***Recycling Information Specialist, Merced County Association of Governments (MCAG)***

This position includes the following duties: participates in public education events/presentations throughout the County; Secretary of the Integrated Waste Management Local Task Force; Zone Administrator for the Recycling Market Development Zone (RMDZ) Program, which encourages manufacturing of new products from otherwise disposed of materials; and conducts public outreach.

### ***Commute Connection Website, MCAG Contracted Service***

*Commute Connection* is a regional rideshare program operated by the San Joaquin Council of Governments, designed to help commuters make the transition from driving alone to a convenient ridesharing option such as carpooling, vanpooling, bicycling/walking, or riding transit. It has a database of over 8,000 commuters interested in sharing the ride to work.

### ***Community Energy Manager, Pacific Gas and Electric***

This position works with local communities whose programs complement the service programs of the utility.

## **COORDINATED DEPARTMENT PROGRAMS**

Through the City's existing goal setting program, annual sustainability goals for City Departments could be established, whether for internal operations or by requirements or incentives that affect the community at-large. This expands and formalizes the *Focused Program* approach.

## **LOCAL GOVERNMENT SUSTAINABILITY MANAGER**

This model is defined by a distinct sustainability program with a dedicated budget and staff that coordinates efforts between City Departments. A Coordinator adds value through establishing a comprehensive plan, which eliminates redundancy and maximizes productivity through teamwork and attainment of larger goals and projects. For example, one of the central roles of the Sustainability Manager in Davis, and the Green Team in Citrus Heights, is to coordinate and communicate across City Departments to focus on common sustainability goals. Capabilities unique to a sustainability coordinator include: implementation of shared programs, a single City representative for community partners, and a designated leader responsible for implementing the CAP. The funding of sustainability coordinators in other jurisdictions has been funded in part or in whole, through grant programs, partnerships with private utilities, and by utilizing the financial savings realized through implemented energy efficiency programs. Some cities have also included a citizen-based Commission as part of this model.

## COMMUNITY-BASED LEADERSHIP PROGRAMS

There are numerous community-based models, such as the *Philadelphia Livable Neighborhood Program* and the *Portland Low Carbon Diet Program* whose strategies focus work at the block level in neighborhoods to encourage individual commitments related to sustainable living. Such programs are bottom-up instead of top-down and have yielded high levels of participation.<sup>19</sup>



## PUBLIC-PRIVATE COMMUNITY GREEN TEAM

This model integrates the *Local Government Sustainability Manager* and the *Community-Based Leadership Program* models under one umbrella program, establishing a comprehensive team-based approach that includes independently engaged public and private entities. This model supports and encourages independent focused programs, but also includes a comprehensive team-based committee of City Staff and Community organizations to share information and to collaborate on program design and operation, to combine efforts thereby enhancing existing programs and to create new opportunities. Merging public and private efforts magnifies the strength and outcomes of sustainability efforts.



## California Public Utilities Commission Study

In 2010, the California Public Utilities Commission prepared a comprehensive study involving more than 100 local governments in California to determine what local governments could do to improve energy efficiency. In regards to the topic of leadership, the study concluded that because financial and staffing constraints limit the ability of cities and counties to perform energy planning, many communities assign energy issues to a single department, such as the planning department. This approach makes energy management appear secondary, does not give the effort the comprehensive stature needed, and can significantly limit the success of a Climate Action Plan. Having a dedicated “energy champion” to plan and implement energy efficiency projects is essential. Successful community energy programs have a top-down commitment to reduce energy consumption and GHG emissions. They use a strong stakeholder process, drawing on people within the community who have energy expertise.<sup>25</sup>

**Many communities assign energy issues to a single department, like the planning department. This approach makes energy management appear secondary, does not give the effort the comprehensive stature needed, and can limit the success of a Climate Action Plan. Having a dedicated “Energy Champion” to plan and implement energy efficiency project is essential.**

## Recommendation

The purpose of the CAP is not to identify which leadership program to implement. Rather, the CAP identifies various models, and emphasizes the need to match the local leadership model with the City’s GHG reduction target. The current “Focused Program” model will only be able to attain part of the GHG reduction goals through implementation of a limited number of strategies and actions. The Climate Action Plan Committee recommends that the City’s first Climate Action Plan-related action, following adoption of the Climate Action Plan, is to examine alternative approaches to implement the CAP’s goals and institute modifications, as appropriate. The assessment of deciding which leadership mechanisms to select should involve a broad cross-section of City departments and Community partners.

# Financing and Budgeting

## Introduction

Due to the large collection of greenhouse gas reduction-related legislation, everyone from state officials to environmental organizations are beginning to recognize the need to help cities and counties fund the proactive planning that is required to make walkable projects happen. In this context, proactive planning means zoning code reform and transit planning. For example, the newly amended California Transportation Commission guidelines will favor transportation funding investments that significantly reduce greenhouse gas emissions as compared to “business-as-usual.” Tracking such trends and funding sources will be essential for the City to attain its sustainability goals.<sup>40</sup>

This Section catalogs and describes many local, state, and federal sustainability programs of probable future funding sources to implement the recommended emission reduction measures.

## Local Funding and Program Opportunities

Recognizing existing budgetary constraints, the funding plan considers all sources of funding opportunities, including local sources. These funding sources are used to cover operational costs and project costs. Throughout California, local governments have instituted sustainability programs that range in financial support from modest part-time positions to expansive multi-million dollar programs. Various funding sources are utilized and include:



- Energy-saving community measures could be funded via fees assessed through utility bills, building permits, or vehicle license fees.
- Incentives may be available from local utilities and regional, state, or federal agencies.
- As the City realizes cost-savings from the implementation of energy and water efficiency programs at City Facilities, the City could use these funds to fund additional sustainable projects or to support a staff engaged in sustainability-related project or programs.
- Operational funding can also be supplemented with funds from General Funds, City Enterprise Funds, City Department utility billing surcharges, rebates and savings from energy efficiency projects, and through partnership with local utilities, or a combination thereof.<sup>15</sup>

## SEED FUNDING FOR SUSTAINABILITY PROGRAMS

In order to reach the higher value “coordinator-based” leadership models, a stable annual source of funding will be needed. Based on the success of other communities, the likely sources of this funding are 1) roll-over energy savings from projects; 2) partnership with a local utilities that provides incentive funds for such activity; and, 3) wise use and selection of grant funds, for example, a second round of EECBG funds aimed at assisting communities to establish long-term sustainability programs.

### ***Revolving Funds***

The cities of San Jose, Long Beach, and Visalia, and the county of San Bernardino are moving toward or are already maintaining revolving loan funds for energy efficiency projects. With revolving funds, capital is applied to projects that produce a stream of dollar savings from energy efficiency cost savings and/or rebate and incentives, which are then used to replenish the fund. These communities approve energy projects either as part of their capital improvement processes or within annual budgets.

### ***PACE***

The counties of Sonoma and Placer, the Community Redevelopment Agency of Los Angeles, and the City and County of San Francisco were chosen as PACE pilot communities. They will receive help from the CA Energy Commission to identify alternative methods of financing in response to challenges brought on by FHWA. They will provide technical assistance to other regions and create models for commercial and residential PACE programs that can be replicated.<sup>11</sup>

#### **SB 83**

**It allows countywide transportation planning agencies to impose an annual fee of up to \$10 on motor vehicles registered within the country. The funds must be spent on measures that reduce traffic congestion, including public transit service expansions. The MCAG has not elected to pursue this funding source.**

## State of California and Local Funding and Program Opportunities

Financial incentives from the State of California and local agencies are available to assist local governments and communities to implement greenhouse gas emission reduction efforts. The form of the incentives are varied, and include rebates, reduced upfront costs, tax exempt status, subsidies, low interest loans, and funding sources.

State of California and Local Green Funding & Program Opportunities					
Program Name	Originating Regulation	Status	Agency	Funding	Other Resources
<b>Hybrid Truck and Bus Voucher Incentive Project</b>	Assembly Bill 118	Voluntary	California Air Resources Board	Voucher	
<b>Zero-Emission Vehicle and Plug-In Hybrid Light-Duty (Clean Vehicle) Rebate Project</b>	Assembly Bill 118	Voluntary	California Air Resources Board	Rebate	
<b>Lawn and Garden Equipment Replacement Project</b>	Assembly Bill 118	Voluntary	California Air Resources Board	Voucher or Rebate	
<b>Zero-Emission Agricultural UTB Rebate Project</b>	Assembly Bill 118	Voluntary	California Air Resources Board	Rebate	

## State of California and Local Green Funding & Program Opportunities

Program Name	Originating Regulation	Status	Agency	Funding	Other Resources
Advanced Technology Demonstration Projects	Assembly Bill 118	Voluntary	California Air Resources Board	Grant	
Goods Movement Emissions Reduction Program	Proposition 1B	Voluntary	California Air Resources Board	Grants/ Incentives	
Carl Moyer Memorial Air Quality Standards Attainment Program		Voluntary	California Air Resources Board	Grants	
Sales Tax Exemption for Alternative Energy Manufacturing Equipment	Senate Bill 71	Voluntary	California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA)	Tax Exemption	
Property Tax Exclusion for Solar Energy Systems	California Revenue and Taxation Code/Assembly Bill 1451	Voluntary	California State Board of Equalization	Tax Exclusion	
REMOVE II Program		Voluntary	San Joaquin Valley Air Pollution Control District	Grants/ Incentives	
Savings By Design		Voluntary	California Public Utilities Commission	Grants/ Incentives	Design services, project consultation



## State of California and Local Green Funding & Program Opportunities

Program Name	Originating Regulation	Status	Agency	Funding	Other Resources
California Communities Lease Finance Program (CaLease)	Joint Exercise of Powers Act	Voluntary	California Statewide Communities Development Authority	Low-Cost, Tax-Exempt Financing	
California First		Voluntary	California Statewide Communities Development Authority	Property Assessed Clean Energy (PACE) Financing (Renewable Funding)	
Commercial/Industrial Lighting Program		Voluntary	Merced Irrigation District	Rebate	
Solar Incentive Program		Voluntary	Merced Irrigation District	Rebate/Incentives	
Commercial New Construction Program		Voluntary	Merced Irrigation District	Rebate	
Customized Commercial/Light Industrial Retrofit Program		Voluntary	Merced Irrigation District	Incentives	

## State of California and Local Green Funding & Program Opportunities

Program Name	Originating Regulation	Status	Agency	Funding	Other Resources
<b>Urban Greening for Sustainable Communities Program</b>	Proposition 84	Voluntary	California Strategic Growth Council	Bond	25% of funds can be used for preparation of comprehensive greening plan
<b>Urban Greening Plans</b>	Proposition 84	Voluntary	California Strategic Growth Council	Bond	
<b>Energy Partnership Program</b>		Voluntary	California Energy Commission	Low Interest Loans	Max. \$20,000 grant for project consultant fees
<b>Energy Efficiency and Conservation Block Grant Program</b>		Voluntary	California Energy Commission	Grant	

## Federal-Related Funding and Program Opportunities

The Federal Government provides many opportunities for states and local governments to engage in sustainable energy practices to reduce greenhouse gas emissions. While many federal agencies are involved in this effort, the following agencies are engaged in notable programs: Environmental Protection Agency, The Department of Energy, The Department of Agriculture, and The Department of Transportation.

### Clean Energy Jobs and American Power Act (Senate Bill 1733)

This is the Senate's climate change bill that seeks to reduce greenhouse gas emission through a nation-wide cap-and-trade program. Emissions would be reduced 20% by 2020 and 83% by 2050. It also contains investments in clean energy technology and provisions to encourage the creation of new "green" jobs. States and municipalities would receive 2.4% of the revenues generated by the act to support expansion of public transit, and for grants for transportation and smart growth planning.<sup>13</sup>

### Federal Green Funding & Program Opportunities

Program Name	Originating Regulation	Status	Agency	Funding	Other Resources
Home Start Energy Retrofit Act of 2010		Voluntary	House of Reps.	Rebate	\$23 per American, over 2010-2015 year
Water System Adaptation Partnership Act of 2009	HR 2969	Voluntary	House of Reps.	Grants	

## Federal Green Funding & Program Opportunities

Program Name	Originating Regulation	Status	Agency	Funding	Other Resources
Energy Efficiency Community Block Grant	American Reinvestment and Recovery Act	Voluntary	IRS	Grants	
The State and Action Climate Partner Network		Voluntary	EPA	No Funding	
It All Adds Up to Cleaner Air		Voluntary	US Dept. of Transportation	No Funding	Offers free material: commercials, brochures, billboards
Energy and Climate Change: Programs, Tools & Resources...	Clean Air Act	Voluntary	EPA	No Funding	EMS: Environmental Management System
Partnership for Sustainable Communities		Voluntary	EPA, USDOH & UD, USDOT	No Funding	
Climate Leaders		Voluntary	EPA	No Funding	
Environmentally Preferable Purchase		Voluntary	EPA	No Funding	Small Businesses
Green Communities		Voluntary	EPA	No Funding	
Cap and Trade Program(s)	Clean Air Act	Voluntary	EPA	Grants	
Lugar Practical Energy and Climate Plan	Cap and Trade	Voluntary	Senator Dick Lugar	No Funding	

# Community Partners/Agents of Change

## Introduction

Effective implementation of the Climate Action Plan will require the participation and cooperation of an array of federal, state, and local government agencies. While the City of Merced, Merced County, THE BUS and Joint Powers Authorities for transit and waste management will be engaged, many other local agencies, quasi-public and non-profit organizations, and individuals play an important role too. The Climate Action Plan Ad-hoc Advisory Committee identified many of Merced's community partners that may potentially offer incentives and/or resources to implement a Climate Action Plan. Many of these organizations, for reasons other than climate change (for example: budgets, operation efficiencies or social needs), have already made important contributions toward reduction of greenhouse gas emissions. This section describes the extent to which the community of Merced is already involved in issues and programs that are directly or indirectly related to climate change.

## Community Challenge

The Community Challenge calls upon residents, businesses, employees, and City staff to mobilize and achieve the targeted GHG reductions. This can be achieved through high levels of community participation in the proposed strategies and actions. The challenge facing the Community is to mobilize high levels of voluntary participation in GHG reduction efforts.

## Utilities

### ***Pacific Gas and Electric (PG&E)***

PG&E provides customers with a portfolio of options to help reduce their carbon footprint, including rebates and incentives for customers to use energy more efficiently, incentives to make customer-owned rooftop solar more affordable and the opportunity for customers to offset the greenhouse gas emissions from their energy use by voluntarily signing up for the *ClimateSmart* program. In total, PG&E has connected more than 40,000 customer-owned solar systems, far more than any other utility in the nation.

**PG&E delivers some of the nation's cleanest energy, with a carbon dioxide emissions rate that is about half the national average for utilities. PG&E provides more than 20 percent of its future power deliveries from renewables.**

PG&E's *Green Communities Program* provides free training, data, and tools to help city and county governments achieve their greenhouse gas reduction goals related to energy usage.



### ***Merced Irrigation District (MID)***

The California Public Utilities Commission mandates that public utilities collect a 2.85% public benefits charge from their customers in their electric bills for energy efficiency and other public benefit programs. Merced Irrigation District electric services allocates a significant portion of its collected public benefit program funds toward energy efficiency programs to their commercial and industrial customers. These programs are provided to qualifying commercial and industrial customers in the form of financial rebates and incentives for the retrofit of existing electrical equipment with more energy efficient equipment.

**MID offers several financial incentives for commercial and residential customers to conserve energy.**

## **Local Business and Industry**

Local businesses and industry can play a key role to achieve the City's GHG reduction goals. Potential partners include the chambers of commerce, green businesses and industries, the local real estate industry, the medical community, hotel associations, home improvement stores, and those engaged in the production or sale of energy savings products. A description of some local efforts are described below.

### ***Building Industry Association of Central California***

The Building Industry Association of Central California (BIACC) is a nonprofit trade association representing 300 member companies who are engaged in all aspects of the home building industry. These companies play a key role in the design and building of communities and can provide extensive knowledge of the industry and innovative capacity to find solutions to the challenge of reducing greenhouse gas emissions. The understanding and ability of the BIACC to comply with applicable laws, such as SB 375 and codes such as the California Green Code are essential to achieving greenhouse gas reduction targets.

### ***Greater Merced Chamber REACON and "Green Team"***

The REACON Team (Recycling, Energy, Air Conservation) is a collaboration between the Greater Merced Chamber, private businesses, municipal and public agencies, economic development professionals, and the communities of Merced County. Its purpose is to promote environmental stewardship solutions, to address environmental and economic development issues, and to create a nexus to enhance the delivery of Chamber services in Merced and all of Merced County.



The REACON Team offers a free business-to-business service, which is an overall assessment of how a chamber member can implement cost-saving measures on disposal services, energy usage, indoor air quality, and other services.

Additionally, the Chamber plans to create a sub-committee, called the “Green Team,” that will consist of other chamber members and the REACON Program.

### ***Land Developers***

In most communities, there are proactive developers and other stakeholders who realize the value of efficiency and renewable energy. These individuals can be of great help in developing advanced codes, because they understand the value of showing leadership on green issues and branding the community as interested in sustainability.

## **Educational Institutions**

### ***UC Merced***

UC Merced has a comprehensive approach to achieving sustainability, which involves the administration and students, who both sit on the Campus Sustainability Committee. The overall goal is to pilot a replicable sustainable energy strategy focus areas: 1) water; 2) waste & recycling; 3) transportation; 4) building; and, 5) generating renewable power.

**UC Merced seeks to maximize energy efficiency in building design and operations - with an initial goal to consume half the energy and demand of other university buildings in California and exceed Title 24 by 30% in all buildings by 2010.**

The student-led *Alliance to Save Energy - Green Campus* Program at UC Merced is on the cutting edge of sustainability. UC Merced students have 4 primary pillars of focus: energy efficiency, water conservation, green work force development, and academic infusion.

### ***Other Local Educational Institutions***

- Merced College
- Local School Districts
- Merced County Office of Education

## Non-Profits and Non-Government Organizations

Merced has a wealth of community organizations that provide strong communication pathways to local residents and offer networking and education services for members. These groups include service clubs; the Lao Community; the Hispanic Network; Bicycle, Pedestrian, and Transit Advocates; and the Sierra Club, among others. Some are described below:

### ***Merced County Community Action Agency***

The Merced County Community Action Agency operates a weatherization program that helps families control their energy costs, thereby freeing income for other essential expenditures. Their goal is to help 400 families move to a more self-reliant position each year, eventually solving the home energy-related problems for low-income families. A typical household saves \$193 a year on energy costs after weatherization is completed.

### ***Building Healthy Communities***

The California Endowment's founding mission to improve the health of Californians is focused in pursuit of a single vision: *Building Healthy Communities* in the state of California. The California Endowment recognizes that the Merced area has the potential to make meaningful changes that will result in improved community health. *Building Healthy Communities* Outcome Four states, "Residents Live In Communities with Health-Promoting Land Use, Transportation, and Community Development;" this is based on the conclusion that conditions in our physical surroundings (environment) where we live, work, play, learn, and shop; how we travel and transport goods; and even where our food comes from; all impact our health and well-being.

### ***Merced/Mariposa County Asthma Coalition (MMCAC)***

The Merced/Mariposa County Asthma Coalition's vision is to fight asthma through education and medical and environmental techniques. In the spirit of a true partnership, the Coalition strives to improve the quality of life of people who have asthma. This diverse, broad, and collaborative partnership aims to affect initiatives through the sharing of information, the commitment of time, and the voice of advocacy.

### ***GRID Alternatives - Central Valley***

Central Valley GRID Alternatives' territory includes the following counties: San Joaquin, Stanislaus, Tuolumne, Mono, Merced, Mariposa, Madera, Fresno, Tulare, Kings, Inyo, and Kern. Their goal is to serve as many qualified home-owners who reside in these counties, save thousands of dollars in electricity bills through solar installations and energy efficiency, while keeping thousands of greenhouse gases out of the atmosphere, and providing thousands of hands-on experiences to eager volunteers and job-trainees.

### ***Bike Tourism***

Bicycle enthusiasts from non bike-friendly communities are attracted to Merced's bicycle transportation network. These visitors book hotel rooms and use other services while pedaling about the City. As such, bike-tourism is yet another benefit of Climate Action Planning, as well as an opportunity to establish local community partnerships around this activity.

### ***CALPIRG's Energy Service Corps (ESC) at UC Merced***

CALPIRG's Energy Service Corps (ESC) is a joint project between the California Public Interest Research Group Foundation (CALPIRG) and AmeriCorps that works with local communities to achieve greater energy efficiency. The ESC Chapter at UC Merced is working to reduce energy use, save money, and curb carbon emissions for homeowners, renters, and businesses in the City and County of Merced. In doing so, they are a leader in local energy efficiency efforts, and act as a catalyst in the community for greater energy efficiency.

ESC has three central divisions - Home Energy Assessments and Weatherization, Education, and Community Coalitions. These branches function independently and collaboratively to achieve their goal to reduce energy use. ESC takes the mystery out of energy efficiency by giving people the tools and knowledge they need to stop energy and associated monetary loss from their homes and businesses. ESC, with the aid of numerous volunteers from UC Merced, also hosted weatherization projects of community buildings, such as the Rescue Mission and the Merced Elks Lodge. Thus far, the group has performed 253 home assessments, outreached to local groups and individuals, and is seeking to form future partnerships with the Merced Community.



### ***Central Valley Coalition for Affordable Housing***

The Central Valley Coalition for Affordable Housing was established in 1989 by the Housing Authority of the County of Merced, due to a need for a local non-governmental organization to bring together the available funding programs within the community with the goal of providing more affordable housing. To date, the Coalition has completed over 5,270 units of low income housing, and has started to expand more into social services. The coalition can be a key partner in reducing greenhouse gas emissions by being a leader in the areas of energy efficiency and conservation of buildings and appropriate siting of new high-density housing developments within the urban core, near transit, and within Merced's urban villages.

## Media and Other Public Outreach Outlets

A Climate Action Plan can be more effective if the community is aware of local reduction measures. If we are to achieve the predicted emissions reductions, resident participation in many of the GHG reduction actions of this plan is essential. For example, in partnership with developers and neighborhood associations, town hall meetings with local neighborhoods can be held to discuss the benefits of infill development, and to give citizens a venue to voice their concerns. Other communication outlets include: the Merced County Times, the Merced Sun-Star, Channel 30 public leaders outlook, internet/social networking sites, newspapers, City Newsletter, utility bills, Website, theater commercials, Merced County Fair displays, schools (science classes), and entertainment venues.

## State Partners

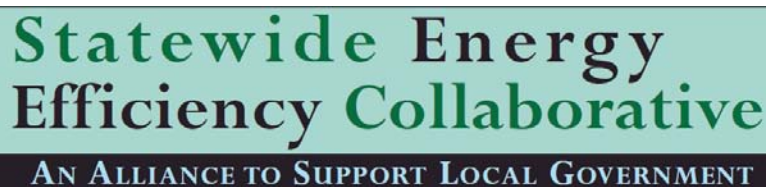
**Strategic Growth Council (SB 732, 2008)**—The SGC was established to provide guidance and incentives to local and regional agencies implementing sustainability strategies, including planning and urban greening grants to support the development of sustainable communities and to make recommendations for better coordination of State planning and sustainability activities and programs.<sup>6</sup>

**Caltrans Smart Mobility Framework (2010)**—“Smart Mobility 2010—A Call to Action for the New Decade” incorporates smart growth and land use/transportation integration concepts into transportation systems for California (Caltrans).<sup>6</sup>

## Public – Private Collaborations

### **Statewide Energy Efficiency Collaborative (SEEC)**

The SEEC is a collaboration between three statewide non-profit organizations and California’s four Investor Owned Utilities to help



cities and counties reduce greenhouse gas emissions and save energy. SEEC members are: 1) ICLEI-Local Governments for Sustainability USA; 2) Institute for Local Government; 3) Local Government Commission; 4) Pacific Gas and Electric Company; 5) San Diego Gas and Electric Company; 6) Southern California Edison Company; and, 7) Southern California Gas Company.

SEEC provides education and tools for climate action planning, venues for peer-to-peer networking, technical assistance, and recognition for local agencies that reduce greenhouse gas emissions and energy use. The collaborative effort is designed to build upon the unique resources, expertise, and local agency relationships of each non-profit organization, as well as those of the four investor owned utilities.<sup>26</sup>



### ***Energy Upgrade California***

Energy Upgrade California is an unprecedented collaboration between the California Energy Commission, the Public Utilities Commission, utilities, local governments, non-governmental organizations, and the private sector to promote and finance energy efficiency and renewable energy projects for homes and businesses, reduce energy use and help train contractors and building professionals. More than \$1.2 billion from a variety of funding sources will be leveraged through Energy Upgrade California including, \$146 million from the American Recovery and Reinvestment Act (ARRA) State Energy Program and Energy Efficiency Conservation Block Grants awards administered by the Energy Commission, \$13 million from Employment Development Department Workforce Investment, and more than \$1 billion from investor-owned utilities for residential and commercial building upgrades. The Energy Upgrade web portal is a one-stop clearinghouse for information, incentives, scholarships, and rebates including alternative financing for residential and commercial building improvements and financial incentives by lenders. All 58 counties have their own page that highlights the services and energy efficiency opportunities available for their residents.<sup>10</sup>

### ***Solar America Communities:***

In April 2010, ICLEI was selected by the U.S. Department of Energy (DOE) to help bring the benefits of clean solar power generation



to communities throughout the United States. Along with the International City-County Management Association (ICMA), ICLEI will expand DOE's Solar America Communities program, conducting outreach to thousands of local governments across the United States, and sharing the valuable lessons learned by DOE's original Solar America Cities. ICLEI and ICMA will provide timely and actionable information to local governments to accelerate solar energy adoption, utilizing a mix of educational workshops, peer-to-peer sharing opportunities, and web-based resources, building off of DOE's compilation of best practices titled "Solar Powering Your Community: A Guide for Local Governments."<sup>23</sup>

## **Statewide and Regional Groups Engaged in Climate Planning and Related Issues**

There is a deep and broad network of groups (academic, economic, research, advocate, and all levels of government) at the local, state, federal, and international stages focused on Climate Action Planning and associated issues and programs. As a whole, these groups offer a wide range of services including financing, education, research, and community collaboration. Climate Action issues exist at all levels of government and non-governmental organizations; to simply list the organizations would fill pages, and a volume of text could be written about their programs. A list of just some of these groups is listed in the *City of Merced Climate Action Plan Background Report*.



# PART 4: Climate Action Plan Strategies and Actions

A Sustainable Vision for the City of Merced

## PART 4: CLIMATE ACTION PLAN STRATEGIES AND ACTIONS

PART 4 of the City of Merced Climate Action Plan is a catalog of greenhouse gas reduction strategies and actions that were reviewed and selected by the Climate Action Plan Ad-Hoc Committee. PART 4 includes the following sections:

PART 4 includes the following topics:

- Sources of Greenhouse Gas Emissions
- Climate Action Plan Values and Goals
- Catalog of Recommended Strategies and Actions

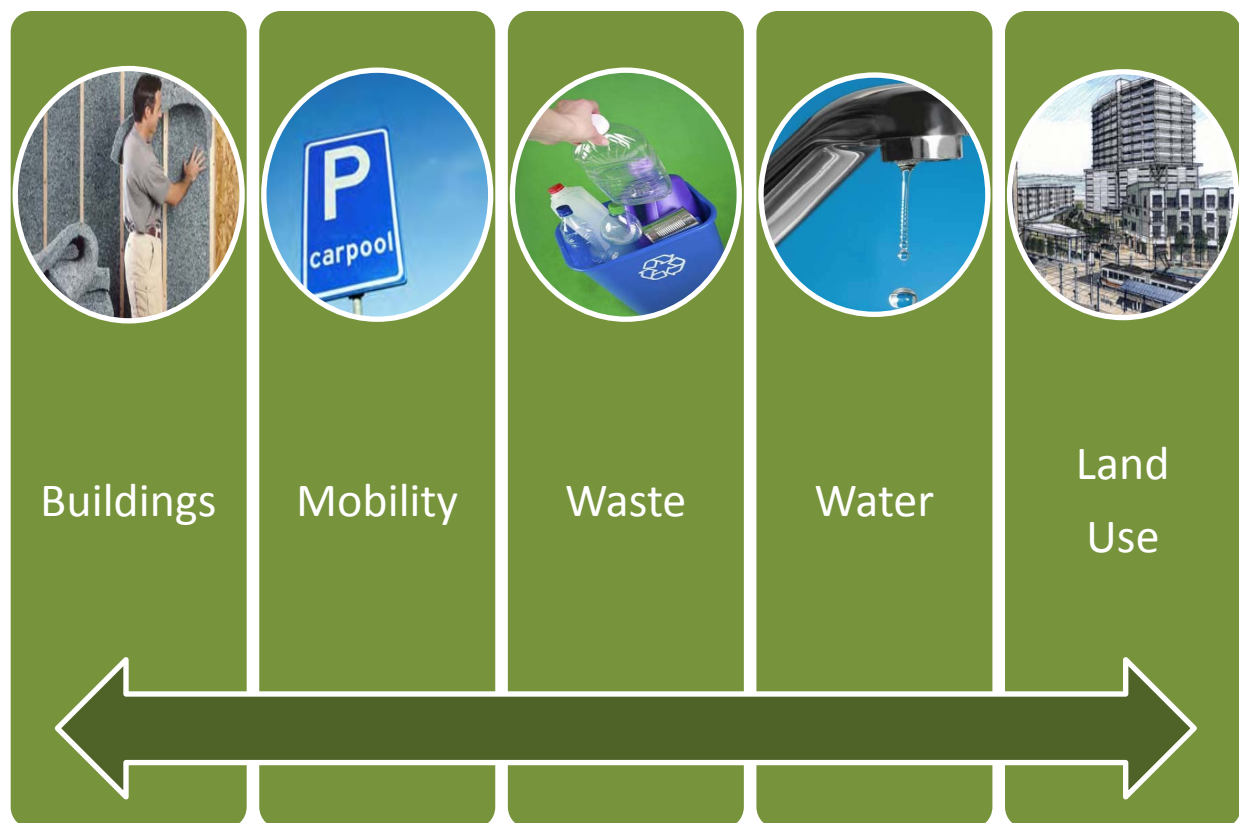
***“Let’s set broad common goals and allow an individual’s creativity and know-how to define the specific ways to achieve them.”***

- Brett Baker, member of the City of Merced Climate Action Plan Advisory Ad-Hoc Committee.

# SOURCES OF GREENHOUSE GAS EMISSIONS

## Greenhouse Gas Reduction Sectors

This section describes those sectors of the community from which greenhouse gas reductions are most likely to occur, and includes buildings, mobility (transportation), waste reduction, water conservation, and land use planning. In one way or another, most greenhouse gas reduction measures align with these sectors. This section concludes with a discussion of GHG emission reductions in local government operations. Strategies and actions to reduce GHG emissions from local government facilities and operation are listed in Appendix E.



## Buildings

Emissions associated with building energy use come from power generation that provides the energy used to operate the building. Power is typically generated by remote fossil-fuel powered electricity generating plants, or onsite generation by fuel combustion. Broadly speaking, the use of fossil fuels for



generating energy (including electricity, heating, transportation, and other uses) is the single largest contributor to greenhouse gas emissions and climate change. Emissions from buildings can be reduced by lowering the amount of electricity and natural gas required for building operations. Buildings can be made more efficient by upgrading insulation and installing low emissive glass, using high-efficiency lighting with timers and sensors, installing cool roofs, and simply adjusting heating and cooling levels. Alternative energy sources can be developed, such as installation of solar collectors, or landfill gas to energy projects. Equipment that heats and cools buildings can be upgraded to the most efficient models, as can computers, telecommunications, and office equipment. Water-wise landscapes can be installed to reduce water pumping costs and urban forests can be planted to reduce building cooling costs during Merced's hot summer months.

### **Residential Retrofit Programs**

**Charleston, SC was selected as a pilot city by the Home Depot Foundation's Sustainable Cities Institute to connect green jobs, economic development, and energy efficiency through a residential retrofit program.<sup>23</sup>**

### **Urban Forest**

Trees reduce atmospheric carbon dioxide (CO<sub>2</sub>) through sequestration and reducing GHG emissions by conserving energy used for space heating and cooling (Figure 1). Carbon sequestration is the process by which CO<sub>2</sub> is absorbed into roots, branches, and leaves, and stored as carbon. Tree shade reduces summer air conditioning demand. Lowered air temperatures and wind speeds from increased tree cover can decrease both cooling and heating demand. Many scientific studies confirm that trees and vegetation are valuable resources for cooling our communities.<sup>24</sup>

## **Mobility (Transportation)**

Automobiles are a leading cause of global warming. Nationally, the transportation sector is one of the largest sources of U.S. emissions, representing nearly one-third of total emissions. It's hard to visualize, but every gallon of gasoline burned emits 20 pounds of CO<sub>2</sub>, the principal global warming pollutant. Besides emitting greenhouse gases, transportation fossil fuels also produce a host of criteria air pollutants when combusted, reducing local air quality and affecting our health. Many local governments are increasing their jurisdictions' fuel efficiency by making alternative forms of transportation more accessible to residents and employees.<sup>24</sup>

### **Complete Streets**

**Boulder, CO has been working to create a complete street network for some time, completing over 350 miles of dedicated bike facilities, paved shoulders and a comprehensive transit network. Between 1990 and 2003, fewer people in the city drove alone, more people bicycled, and transit trips grew by an amazing 500%. The reduction in car trips has cut CO<sub>2</sub> emissions in Boulder by an impressive half a million pounds per year.<sup>36</sup>**

Transportation emissions can be reduced by improving pedestrian and bicycle infrastructure, enhancing public transit service, discouraging single-occupancy vehicle use, and improving the City's vehicle fleet, or by reducing the vehicle miles traveled. Land use is closely linked to transportation because it is the orientation of destinations that require us to travel. The Land-Use Sector is closely aligned with the Transportation Sector, and focuses on ways to support pedestrian and transit-oriented development, discourage sprawl, and to encourage compact urban forms.

## Waste Reduction

There are three main stages of product life-cycles, all of which provide opportunities for GHG emissions. These stages are: raw material acquisition, manufacturing, and waste management.

All products use inputs of *raw materials*, such as metal ore, petroleum, trees, etc. Extracting and transporting these materials entails the combustion of fossil fuels for energy, which results in emissions of carbon dioxide. These fossil fuels must be extracted themselves, which requires additional energy use.

*Manufacturing processes* that transform raw or recycled materials into products require the combustion of fossil fuels for energy. Again, energy use produces GHG emissions both directly from the combustion of fossil fuels and from the upstream energy used to obtain and transport those fossil fuels. In addition, some manufacturing processes release other GHGs.

If a product is not recycled at the end of its useful life, it goes through one of three *waste management* options: composting, combustion, and landfiling. All three produce GHGs to varying degrees.<sup>51</sup>

Waste prevention and recycling are potent strategies for reducing greenhouse gas emissions most notably by:

- Reducing methane emissions from landfills. The most common waste management practice, results in the release of methane from the anaerobic decomposition of organic materials. Waste prevention and recycling (including composting) divert organic wastes from landfills, thereby reducing the methane released when these materials decompose. Methane is 21 times more potent a GHG than carbon dioxide.





- Reducing emissions from incinerators. Recycling and waste prevention allow some materials to be diverted from incinerators and thus reduce greenhouse gas emissions from the combustion of waste. Combustion releases both carbon dioxide and nitrous oxide (a GHG that is 310 times more potent than carbon dioxide).
- Reducing emissions from energy consumption. Recycling saves energy. Manufacturing goods from recycled materials typically requires less energy than producing goods from virgin materials. Waste prevention is even more effective at saving energy. When people reuse things or when products are made with less material, less energy is needed to extract, transport, and process raw materials and to manufacture products. The payoff? When energy demand decreases, fewer fossil fuels are burned and less carbon dioxide is emitted to the atmosphere.
- Increasing storage of carbon in trees. Trees absorb carbon dioxide from the atmosphere and store it in wood, in a process called "carbon sequestration." Waste prevention and recycling of paper products allow more trees to remain standing in the forest, where they can continue to remove carbon dioxide from the atmosphere.

## Water Conservation

Nationwide, drinking water and wastewater systems cost more than \$4 billion a year in energy costs to pump, treat, deliver, collect, and clean water – and the majority of this cost is paid for by municipalities. The energy costs to run drinking water and wastewater systems can represent as much as one-third of a municipality's energy bill and this is often the single largest utility expenditure for a city.<sup>24</sup> Water-Related Opportunities include water conservation measures applicable to both indoor and outdoor water use.



The *City of Merced 2010 Urban Water Management Plan* recommends that in order for the City to achieve the projected water conservation target of 20% reduction in water use per capita by 2020, the City should prioritize its efforts towards implementing its water conservation programs. These will affect both indoor and outdoor water use.

## **Outdoor**

Energy use associated with pumping, treating, and conveying water generates indirect GHG emissions. The amount of energy required depends on both the volume of water and energy intensity associated with the water source. For example, it generally takes less energy to pump and convey water from a local source than to transport water across long distances. As a result, the GHG emission factor associated with locally-sourced water will also be lower. Indirect GHG emissions associated with water use can be decreased by reducing the water demand and/or by using a less energy-intensive water source.

The volume of water required for landscaping will depend on the area extent of landscaping, the specific watering needs for the type of vegetation, and the water efficiency of the irrigation system. A reduction in outdoor water demand can be achieved by designing water-efficient landscapes that include plants with relatively low watering needs, minimize areas of water-intensive turf, and include smart irrigation systems to avoid excessive water use

### **Open Space Storm Drainage**

**The US EPA awarded Sacramento County a half-million dollar grant to expand the River Friendly Landscaping Program a collaboration by the County, nonprofits, and other local government agencies to promote landscaping that helps conserve water and protect rivers. The competitive grant program funds local initiatives aimed at combating greenhouse gases and improving the environment.** <sup>37</sup>

## **Indoor**

Similar to outdoor water use, indirect GHG emissions from indoor water use can be reduced by decreasing water demand or using a less energy-intensive water source. A project can reduce its indoor water demand relative to the baseline scenario by installing low-flow and high-efficiency water fixtures and appliances such as toilets, showerheads, faucets, clothes washers, and dishwashers.

## **Land Use**

The distribution of different types of land uses, their design, their accessibility, and their intensity can have profound effects on energy use, water use, and vehicle miles of travel. Increasingly, many communities are designed in such a way that residents are living farther from places of work, school, and services. This growth pattern fosters an increasing dependence on motor vehicles. This community design, commonly known as sprawl, translates into higher air and global warming pollution associated with higher rates of car travel.

Some local governments have moved forward with creative planning that has revitalized the urban core zones in their areas with transit-oriented, mixed-use, high-density development of brownfield sites. The results are vibrant, livable, walkable communities where local residents work, shop, and play, and which attract visitors and bring economic vitality along with quality of life. Strategies and actions that result in such communities save green spaces and money by cutting fuel, utility and infrastructure, and service delivery costs.<sup>24</sup>

The planning that local governments undertake, namely the General Plan, and any specific Area Plans or Climate Action Plans, can form the basis for thoughtful and effective actions to reduce GHG emissions from local activities. When this planning is undertaken in concert with broader regional planning, such as “Blueprint” planning, regional transportation planning, and air quality planning, the impact of GHG reduction efforts is multiplied many times. PART 2 of the CAP discusses the role of these planning efforts, and how they interrelate to effectively respond to the challenge of climate protection.<sup>16</sup>

### **Dwelling Energy Efficiency**

**Other factors being equal, attached and multi-unit housing units tend to use significantly less energy for heating and cooling compared to detached houses - by 20% or more, according to some estimates.<sup>22</sup>**

## **GHG Emission Reductions in Local Government Operations<sup>16</sup>**

The buildings, equipment, and infrastructure of local government all use energy. In general, newer purchases and installations tend to be more energy efficient, but there are plenty of opportunities to enhance efficiency and cut energy use. There are five core areas of local government operations that are responsible for GHG emissions. These include: Energy Use, Waste and Recycling, water delivery and wastewater treatment, transportation, and the built environment.

**Energy Use:** Local governments can change the emissions profile of the energy they purchase from their energy providers. Public infrastructure such as street lighting and traffic signals can be upgraded with state-of-the art technology. Lifecycle carbon costs of maintaining infrastructure as diverse as roads, bridges, and transit facilities can be evaluated so that the least carbon-intensive materials and procedures are used.

**Waste and Recycling:** To reduce emissions from their own operational waste stream, jurisdictions can enhance employee access to recycling, create purchasing guidelines to emphasize recycled materials, less packaging, and to avoid products that release more potent GHGs. Local governments also may operate or exercise contractual control over waste handling programs, depending on how these services are structured and provided in their jurisdictions. Emissions from this portion of the waste stream can be reduced through methane recovery, recovery of potent GHG from foam and refrigerant systems, and other adjustments to collection systems.

**Water Delivery and Wastewater Treatment:** Movement, storage, and treatment of water and wastewater use significant amounts of energy. Local governments can reduce their own water use by installing low-flow fixtures; by inspecting, repairing and replacing leaking components; especially irrigation and other water supply at remote sites that often go unnoticed for long periods; and through water-wise landscaping. Water reclamation and graywater systems can also trim the carbon footprint from water use, and managing time of demand with large water users can significantly alter the energy needs at peak delivery times.

**Transportation:** Local governments can reduce the GHG emissions of their vehicles by replacing older vehicles with the highest efficiency vehicle that can perform the needed function. They can also reduce the overall size of the fleet by increasing the use of pooled vehicles instead of assigned vehicles, and encouraging carpooling when on government business. As employers, local governments can institute programs to increase employee use of alternate modes of transportation, such as transit, carpooling, biking, and walking to work, and they can offer compressed work schedules, telecommuting, and even satellite offices. If properly designed, many of these strategies can also help decrease GHG from the public accessing the jurisdiction's services, as can offering access to services online.



**The Built Environment:** Commitments to highly efficient construction in their own new facilities is one way local governments can reduce carbon emissions from the built environment. Many local governments are building or retrofitting their facilities to LEED certification standards. The siting of new facilities is also an opportunity to improve access by employees and the public and reduce transportation-related emissions. In addition, when it establishes the building codes for its jurisdiction, local government has the opportunity to significantly alter the energy used in constructing, maintaining, and using the built environment.



# CLIMATE ACTION PLAN VALUES AND GOALS

## Sustainability and GHG Emission Reductions

In the prior section, the various sectors of GHG emission sources were described and include buildings, mobility (transportation), waste reduction, water conservation and land use planning. As sources of emissions, these sectors are also the areas from which GHG reductions occur. Reducing emissions in these sectors provide other valuable benefits to the community.

As discussed in “Climate Action Plan Values,” a section of PART 2 of the CAP, City Staff and the Committee recognized the importance of Climate Action Planning *Co-Benefits* and their relationship to greenhouse gas reduction. Co-Benefits include values such as water conservation, livable communities, and clean environments, among others.

## Plan Values and Goals

The Climate Action Plan Ad-Hoc Advisory Committee believed it was important to emphasize the “what” part of the Plan, that is, the over-arching values and goals of the Plan that give implementers the vision and ability to add and adjust the Plan’s specific strategies and actions over time within a broad guiding framework. Four values were identified, each supported by a set of goals, under which strategies and actions are set. Note that the goals closely align with the GHG emission and reduction sectors.

VALUES	GOALS
<i>Healthy Communities</i>	Enhance Mobility of all Transportation Modes (EM) Sustainable Community Design (SC)
<i>Quality Natural Resources</i>	Water Conservation and Technology (WC) Protect Air Resources (AR) Waste Reduction (WR)
<i>Clean Energy Resources</i>	Increase the Use of Renewable Energy Resources (RE) Building Energy Conservation (BE)
<i>Leaders and Partners</i>	Public Outreach and Involvement (PO)



# CATALOG OF RECOMMENDED STRATEGIES AND ACTIONS

## Introduction

Given the large number of local communities engaged in Climate Action Planning, along with the numerous sources of GHG emission sources, the variety and scale of sample strategies and actions to reduce greenhouse gas emissions is tremendous. City Staff and interns assembled GHG reduction measures and actions from a variety of sources, including suggestions from the Merced Climate Action Plan Ad-hoc Advisory Committee, to create a warehouse of ideas for use by the Committee and its assessment teams.

Among other resources, the *Merced Vision 2030 General Plan* contributed heavily to the CAP's strategies and actions. This internal consistency with the City's General Plan gives the CAP several strengths including: 1) being firmly grounded on established community values and adopted policies; 2) being able to tier off the Environmental Impact Report of the General Plan; 3) assurance that potential strategies and actions are not overlooked; and, 4) and implementation of the CAP satisfying multiple goals of the City.

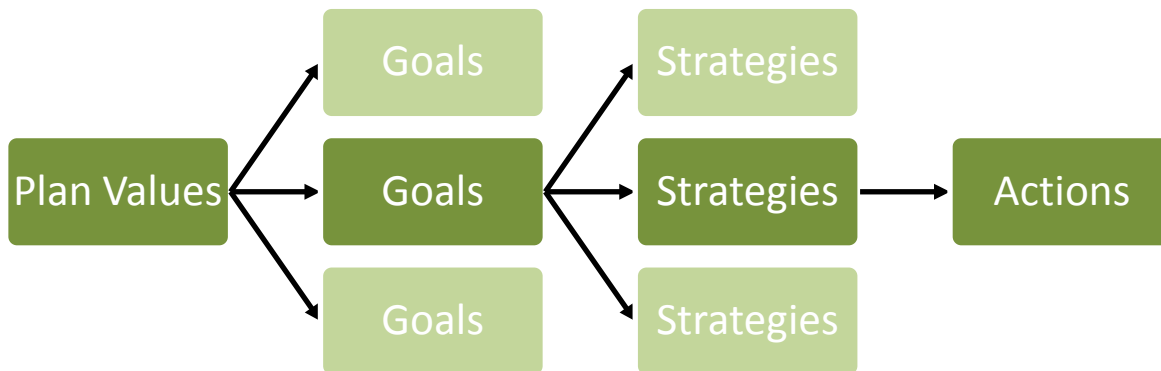
## Final List of Greenhouse Gas Reduction Measures

Using this warehouse of ideas, City Staff prepared a draft set of greenhouse gas values, goals, strategies, and actions for Committee consideration. The selection was crafted using several tools including the *Context* and *Capacity* PARTS of this Plan, a consistency review with General Plan policies, and guiding comments made by the Climate Action Plan Ad-hoc Advisory Committee. The Committee provided comments through group discussion of concepts and specific measures, and assessment team workshops. In this later approach, the skill and knowledge base of the 18-member Committee was focused by creating small workgroups assigned to specific Goal Areas (Buildings and Energy, Transportation, Land Use, Waste Reduction, Green Initiatives, and Water Conservation), which correspond to GHG emission sectors of the City's 2008 Greenhouse Gas Emission Inventory.

Measures with small GHG emission reduction potentials were not rejected, because all actions to reduce GHG emissions will be necessary to achieve the City's target. Plan implementers should be aware of the GHG emission reduction potentials in balancing program objectives and resources.

## Overview of the Plan's Values, Goals, Strategies and Actions

This section contains a catalog of the Plan's strategies and actions. The Climate Action Plan includes detailed GHG reduction actions, which are cataloged under 4 Plan Values, 8 Goals, and 31 Strategies.



Among other resources, the *Merced Vision 2030 General Plan* contributed to forming the CAP's strategies and actions. This internal consistency with the City's General Plan enables the Climate Action Plan to tier off the Environmental Impact Report of the General Plan. The inclusion of the City's General Plan policies in this Plan also assures that potential strategies and actions are not overlooked, and efforts are not duplicated by City Staff resources.

### VALUES

Goals and General Plan policies that generally support efforts to attain these goals (Appendix F) are listed for each value. Other General Plan policies concerning these goals exist, but are more detailed and appear as strategies and actions.

### GOALS

For each goal, various strategies are listed along with a discussion of their relevance to Climate Action Planning.

### STRATEGIES AND ACTIONS

A listing of strategies and actions follow the introductory information about values and goals. Actions related to the review of development projects are not listed in this part of the Plan; they are grouped in Appendix E for convenient use by City Staff and the development community.

The numbering format of actions references an action's goal and strategy. For example, Action 4.3.1 is known as Action 1 of Strategy 3 of Goal 4.

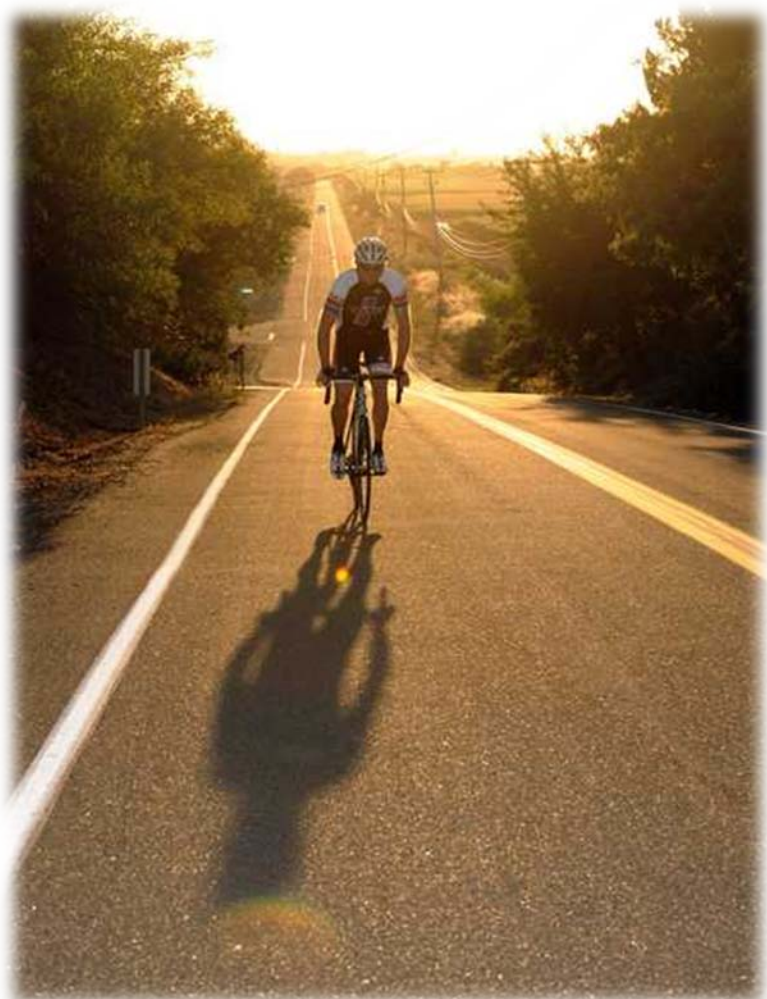
## GHG Emission Reduction Targets by Goal

The Climate Action Plan Advisory Ad-Hoc Committee emphasized that the CAP should describe what success looks like through use of broad terms and descriptions. As one member put it, the Plan is about “what” more than “how.” Such focus allows goals to be increased or reduced depending upon success of implementation, and it avoids a Plan that is too prescriptive, as future feasible actions are difficult to predict today. This approach also places higher value on incentive-based actions, enabling the diversity of community ideas and needs to form and implement actions without unrealistic outside pressures or directives.

In the Plan, this Committee guidance is expressed by use of high level values and goals. The goals are further emphasized in this section by matching them with supportive *Merced Vision 2030 General Plan* policies (Appendix F). The Plan’s 31 strategies also describe what success looks like.

As an action plan, the CAP also includes numerous tangible actions that support the Plan’s strategies, goals, and values, though it should be recognized that over time, actions will change and new ones will be added.

For each of the GHG reduction sectors (mobility/land-use, buildings, and waste reduction), the following GHG Emission reduction targets and associated amounts of CO2 equivalent apply to the Plan’s eight goals.



## GHG REDUCTION TARGET – BY GOAL:

### HEALTHY COMMUNITIES

1. 21% of the GHG Emissions targeted for reduction will be accomplished through enhanced mobility programs and projects.
2. 10% of the GHG Emissions targeted for reduction will be accomplished through sustainable land use designs and urban growth management.

### QUALITY NATURAL RESOURCES

3. 5% of the GHG Emissions targeted for reduction will be accomplished through water management practices.
4. 10% of the GHG Emissions targeted for reduction will be accomplished through programs and actions that protect the quality of Merced's air resources.
5. 1% of the GHG Emissions targeted for reduction will be accomplished through waste reduction programs.

### CLEAN ENERGY RESOURCES

6. 23% of the GHG Emissions targeted for reduction will be accomplished through utilization of renewable resources.
7. 30% of the GHG Emissions targeted for reduction will be accomplished through energy conservation habits and equipment.

### LEADERS AND PARTNERS

8. The Public Outreach goal facilitates achievement of all targets and is not accounted separately.

## Continuing Public Involvement and Council Actions

After the CAP is adopted, specific actions will be developed by CAP leadership and presented for the City Council's consideration prior to actual implementation. The specific approach, partners, and funding sources will be detailed at that time. There is no evidence that either the voluntary or mandatory approach results in a better outcome.<sup>25</sup> This approach will allow for additional public involvement, refinement of ideas, and confirmation of support near the time the action would be implemented.

### IMPLEMENTATION DECISION-TREE

The Climate Action Plan is primarily a collection of existing City policy statements that foremost improve the community and secondarily, reduce greenhouse gas emissions. Implementation of the CAP's recommended actions is likely to involve citizens, elected and appointed officials. Adoption of the CAP does not automatically deploy actions for implementation.

The "Implementation Decision Tree" section found in PART 5 of the CAP, "Implementation," describes the process City Department heads and managers will use when taking steps to initiate implementation of the actions recommended in this plan. Please refer to that section for details.







# Value: Build Healthy Communities

## Goal 1

**21% of the GHG Emissions targeted for reduction will be accomplished through enhanced mobility programs and projects.**

## Goal 2

**10% of the GHG Emissions targeted for reduction will be accomplished through sustainable land use designs and urban growth management.**

## Goal 1: Enhance Transit, Pedestrian, and Bicycle Mobility (EM)

### Site Design Planning

Most developments are designed to provide the most direct and convenient access by car at the exclusion of other mode of transportation. It is possible to design sites in ways that encourage less polluting transportation modes and still support access by motor vehicle.

### Transit Planning

Cost effective, efficient public transportation is important in any effort to provide a level of service necessary to attract increasing public ridership. Through MCAG and the Merced County Consolidated Transit Agency, the City of Merced should continue to participate in planning efforts which promote improvements to the regional and local public transit systems.

The City is fortunate to have a central corridor, containing many of the major land use destinations within the urban area, aligned in general proximity to the length of “M” Street. These destinations would be convenient to a primary transit route on this roadway, and additional urban area destinations would be convenient to secondary or connecting routes on roads perpendicular to “M” Street. In addition, Bellevue Road/the Merced-Atwater Expressway and the Campus Parkway could provide connections to the “M” Street transitway, as well as a potential for future connections to regional facilities.

Just as the City’s Downtown Transpo Center is a primary transfer station for public transit and private bus services, the area around any high speed rail station or other commuter rail system should accommodate all modes of public and private transit. The City will continue to work with the High Speed Rail Authority and Amtrak to create and expand such facilities.

Transit routes should serve industrial areas so that employees can reach their jobs by means other than the private automobile. The location of industrial areas and other major employment centers will be considered as transit routes are established.

### Bicycle Planning and Projects

Given Merced’s attractive climate and flat terrain, bicycle transportation can be very effective. The City of Merced and Merced County have cooperated to develop an impressive regional bicycle system in the Merced/Lake Yosemite area. This has helped to place this area in a position to attract major cycling events. The bicycle system is also an important community and regional

#### Bicycle Transportation

**In the City of Davis, 17% percent of all trips are taken on a bike. In San Francisco, the number of bike commuters doubled while the number of bike collisions declined.<sup>39</sup>**



recreational asset. Merced's bikeway and urban trail system has become a model for the region and an important element of the character of Merced. The system's use of the natural open space resources of the community has benefited the public and helped to preserve important open space lands. Bikeways and urban trails are an important element of the greenway system and provide linkages between other elements of the park system, public transportation, and residential and commercial areas throughout the City. The *2004 Park and Open Space Master Plan* and the City's *Bicycle Master Plan* address bikeway and trail systems.



## **Pedestrian Planning**

Providing a pleasant pedestrian environment can often be achieved with very little cost or effort. By making planning for pedestrian access an integral part of the circulation planning process, significant enhancements to pedestrian access within and around Merced's neighborhoods can be accomplished. Significant air quality benefits can be derived from promoting pedestrian-friendly environments. The City currently requires all streets to have sidewalks upon development. The City of Merced has also utilized safe routes to school funds to provide safety improvement around schools.

### **Pedestrian Plans**

**The City of Richmond cobbled together \$350,000 of grant funds from a Caltrans Environmental Justice Grant and the Metropolitan Transportation Commission to get feedback from the community on how to shape the City's plan for greater safety and mobility for pedestrians and bicycle riders.<sup>38</sup>**

## STRATEGY EM 1.1: SITE DESIGN PLANNING

**STRATEGY:** Increase percentage of citizens that travel by walking, cycling, and by using transit services.

### ACTIONS FOR STRATEGY EM 1.1

**EM 1.1.1:** To be consistent with existing Air District requirements, encourage project designs which increase the convenience, safety and comfort of people using transit, walking, or cycling (General Plan Policy L-3.3 Implementing Action 3.3.a); adopt design guidelines.

**EM 1.1.2:** Encourage all subdivision street and lot designs, commercial site plans, and multi-family site plans to improve access by transit, bicycle, and walking (General Plan Policy L-3.3 Implementing Action 3.3.b); adopt design guidelines. Just a few examples of design options that could be recommended during design review include:

- Direct access to commercial centers from surrounding neighborhoods.
- Intra-development designs that incorporate integrated street patterns rather than designs which limit ingress and egress options to the development and restrict traffic to a limited number of arterials.
- Primary ground floor commercial building entrances should orient to plazas, parks, or pedestrian-oriented streets, not to interior blocks or parking lots as feasible.
- Promote the use of trees and plants in travel-way landscaping and residences.
- Building facades should be varied and articulated to provide visual interest to pedestrians.
- Street trees should be placed in planter strips or tree wells. Tree species should be selected to create a unified image for the street and provide an effective canopy.
- Sidewalks should provide an unobstructed path. Larger sidewalk dimensions are desirable in commercial areas where pedestrian activity will be greatest.
- Encourage the use of front porches, bay windows, and balconies which face onto the street to increase social interaction and provide heightened security for residential streets.
- Identify locations suitable for street furniture, and encourage its use.

### ACTION DESCRIPTIONS

**Site Design (EM 1.1.1):** Create a user-friendly guide describing air quality friendly designs.

**Site Design Guidelines (EM 1.1.2):** Review the City's development review procedures and modify, as appropriate, to include policies that accommodate access and internal circulation by alternative transportation modes. Develop design guidelines that illustrate preferred designs.

## STRATEGY EM 1.2: TRANSIT PLANNING

**STRATEGY:** Improve local transit service and ridership through proactive partnership with transit planners and providers.

### ACTIONS FOR STRATEGY EM 1.2

- EM 1.2.1:** Provide for and maintain a major transitway along "M" Street and possibly along the Bellevue Road/Merced-Atwater Expressway and Campus Parkway corridors (General Plan Policy T-2.1).
- Cooperate with Merced County and other interested agencies outside the City to maintain long-term flexibility to achieve an "M" Street Transitway (General Plan Policy T-2.1, Implementing Action 2.1.b).
  - Cooperate with Merced County and other interested agencies outside the City to maintain a viable option for a Bellevue Road Transitway to provide regional public transit access to the University of California (UC) campus (General Plan Policy T-2.1, Implementing Action 2.1.d).
  - Cooperate with Merced County and other interested agencies outside the City to evaluate the need to extend westward the Bellevue Road Transitway Corridor Concept (General Plan Policy T-2.1, Implementing Action 2.1.e).
  - Plan for multi-modal transfer sites that incorporate auto parking areas, bike parking, transit, pedestrian and bicycle paths, and park and ride pick-up points (General Plan Policy T-2.2, Implementing Action 2.2.f).
  - Encourage park and ride lots at suitable locations serving long distance and local commuters (General Plan Policy T-2.2, Implementing Action 2.2.g).
- EM 1.2.2:** Plan the area around new commuter, passenger, and mainline rail stations to provide convenient and safe pedestrian and bicycle access and connections to the transit system (General Plan Policy T-3.5, Implementing Action 3.5.c).
- EM 1.2.3:** Ensure that the Downtown is connected to the rest of the City through improved bus service, better bicycle and pedestrian connections, and enhanced connections between Downtown and Merced College and the UC campus (General Plan Policy L-2.8 - Implementing Action 2.8.c).
- EM 1.2.4:** Consideration should be given to provide attractive, efficient, and affordable means of mass transit between industrial areas and residential areas of the City (General Plan Policy L-2.4 - Implementing Action 2.4.c).



## STRATEGY EM 1.3: BICYCLE PLANNING AND PROJECTS

**STRATEGY:** Dramatically Increase the amount of facilities that support bicycle transportation throughout the City.

### ACTIONS FOR STRATEGY EM 1.3

- EM 1.3.1:** Utilize the urban stream system in the planning and design of bikeways and trails (General Plan Policy T-3.2, Implementing Action 3.2.a).
- EM 1.3.2:** Work with Merced County to establish connecting links to existing and planned inter-community bikeways. For example, provide a link between the City and County bikeway systems by establishing a connector to the Lake Road Bikeway Corridor out to Lake Yosemite (General Plan Policy T-3.2, Implementing Action 3.2.d).
- EM 1.3.3:** Develop an off-street bikeway and trail system in South Merced (General Plan Policy T-3.2, Implementing Action 3.2.e).
- EM 1.3.4:** Stripe 20 miles of bike lanes on existing City streets and 5 miles of Class I pathways by 2020.
- EM 1.3.5:** Implement the City of Merced Bike Plan, with particular focus on constructing safe, comfortable, continuous bike facilities that connect residential, workplace, commercial, school and recreation destinations.
- EM 1.3.6:** Update the *Bicycle Master Plan* to reflect the Climate Action Plan and to coordinate with Complete Streets and Safe Routes to School policies.
- EM 1.3.7:** Create an incentive-based program to encourage workplaces to provide destination amenities required by bicyclists, including: safe, secure, covered bicycle parking; and showers and lockers at workplaces.
- EM 1.3.8:** In addition to off-street Class I Bikeways and Class II Bike Lanes, explore designs and appropriate sites in Merced for bicycle use spaces to be located within street rights-of-way having limited exposure to vehicular traffic, such as sharrows, shared streets, and bike boulevards.
- EM 1.3.9:** Update the Official City Design Standards to be consistent with the Bicycle Master Plan, the *Merced Vision 2030 General Plan* and the *Climate Action Plan*, by inclusion of facilities such as: traffic signal sensors that detect bicycles, and signs beside and on the street that alert motor vehicle drivers to the presence and appropriateness of bicyclists on the street.

## STRATEGY EM 1.4: PEDESTRIAN PLANNING AND PROJECTS

### **STRATEGY: Build Enticing Pedestrian Corridors**

#### ACTIONS FOR STRATEGY EM 1.4:

- EM 1.4.1: Healthy Community Pedestrian Master Plan / Development Guidelines.** Partner with the local health department to examine methods to assure and enhance walkability in new developments and in existing areas that could benefit from pedestrian-related improvements, and contribute this information to Action Item EM 1.1.2.
- EM 1.4.2: Merced Safe Routes to School Program.** In partnership with the local school districts and the local Building Healthy Communities organization, expand the City's Safe Routes to School Program to include the following elements:
- Maps for safe routes for all schools in the City limits;
  - Host a walk to school day;
  - Encourage regular walking to school through friendly competition;
  - Produce and disseminate safe routes to school maps to parents;
  - Partner in teaching how to drive a walking school bus; and,
  - Track walking and biking to school.<sup>45</sup>
- EM 1.4.3: Shared Streets.** As part of a new pilot-program by the City to explore different ways to utilize right-of-way for multiple uses while saving money and creating livable communities, identify and construct a Shared Street.
- EM 1.4.4:** Provide drainage channels in transportation or canal easement areas to the extent feasible. Reflect the planned regional streets and open-space network to the degree possible when locating new future drainage facilities (General Plan Policy P-5.2, Implementing Action 5.2.a). **Green Streets.** Following the success of other communities, develop and implement a pilot program to create green streets.
- EM 1.4.5:** Adjust City Standards, where applicable, to assure construction of pedestrian-friendly neighborhoods and shopping districts (pedestrian amenities, street trees, transit facilities, etc.).

#### ACTION DESCRIPTIONS

**Healthy Community Development Guidelines (EM 1.4.1):** New data from the Centers for Disease Control (CDC) indicates that not only is the number of people with obesity, diabetes, and heart disease growing, the trends appear to be accelerating. UCLA Center for Health Policy Research estimates that 67% of Merced County adults are overweight or obese (ranking Merced County second in the State for obesity prevalence). To address this high rate of obesity, the Merced County Health Department may be interested in partnering with local planning departments to assure walkability in new development.

**Safe Routes to School Program (EM 1.4.2):** Today only 13 percent of children walk or bicycle to school, as opposed to 66 percent in 1970. During the school year, much of the morning traffic can be attributed to parents driving their children to school. More parents drive their children as a result of increased congestion near schools, further aggravating the problem. These trends have serious implications for both childhood obesity and respiratory problems, which are both rising trends. Safe Routes to School programs promotes walking and biking to school in order to reduce pollution and promote children's health and community livability. For example, in Marin County, single student car trips dropped by 13 percent, saving over 4,250 one-way trips each day, since the program was instituted.<sup>24</sup>

**Shared Streets (EM 1.4.3):** *Shared Streets* brings cars, bicycles, and pedestrians together to share the same space. Sidewalks and curbs are eliminated and vegetation and even art is extended into what is usually the domain of the automobile. Colored, patterned concrete is proposed to extend across intersections to emphasize the pedestrian character of the street. While these spaces are being created on alleys and other streets with light vehicular traffic, some cities, for example Sacramento, have created a shared street in the downtown that lines the convention center, two hotels, and several restaurants.<sup>33</sup>

**Green Streets (EM 1.4.4):** Green Streets supports walking as a form of transportation and reduces urban runoff, the primary source of water pollution. For example, the City of Sacramento opened a five-block long project featured by a new storm-drain system that replaced the traditional curb-and-gutter whereby planter strips double as detention basins for storm-water runoff. In Portland, Oregon, green infrastructure has come out of the laboratory and into the mainstream as a legitimate and necessary strategy for controlling urban watersheds. Along with a diverse network of rain gardens, eco-roofs and strategically planted trees, Portland regards green streets as integral parts of its stormwater infrastructure. Through its pilot program, Portland has proved that street planters, curb extensions, and simple green strips in the medians along city streets can provide cost-effective peak flood reduction of 80+ percent, filtration of pollutants, groundwater recharge, soil rehabilitation, improved pedestrian safety, beautification of neighborhoods, and enough volume detention to increase home values and help alleviate the urban "heat island" effect.<sup>34</sup>

## STRATEGY EM 1.5: MOBILITY DEVELOPMENT REVIEW POLICIES

(Actions are listed in Appendix E)



## Goal 2. Sustainable Community Design (SC)

Many urban areas in the San Joaquin Valley are not conducive to walking, cycling, and transit use. Office developments have low employment densities and are often isolated from commercial services, forcing people to drive to eat lunch or to complete errands. High-density residential projects often have little if any commercial development nearby or discourage pedestrian access to commercial uses with block walls and large parking lots. The most common single-family lot size of 6,000 to 10,000 square feet leads to population densities too low to support frequent and direct transit service. The predominant suburban development patterns force all local trips for shopping, recreation, school, as well as commute trips onto the arterial street system. This leads to ever wider, more congested arterial streets which in turn discourage people from walking or cycling to even nearby destinations. To guide the City of Merced from these negative qualities, the City of Merced uses the Urban Village Concept, supported by General Plan goals, notably 1) create a compact urban form; 2) plan for and develop mixed-use projects; and, 3) maintain a high quality community appearance.

### COMPACT URBAN FORM / INFILL

Through the promotion of compact urban form, the City of Merced can achieve several important environmental and community planning goals. Through the concentration of urban development within the City's SUDP/SOI, impacts on surrounding agricultural resource lands can be reduced and important prime soils preserved. Additionally, through compact urban development, efficient public transit systems can operate to protect the region's air quality and pedestrian and bicycle use is encouraged. Compact urban development also reduces public infrastructure development and maintenance costs to the City and its residents, resulting in an efficient use of City resources.

#### **Compact, Mixed-Use Communities Save Local Governments Money**

**The Sacramento Area Council of Governments and Southern California Association of Governments have computer models that are capable of comparing the economic costs of current land use patterns to those planned under their adopted regional blueprint plans. They have employed this tool to calculate the cost of infrastructure under these scenarios. It is no small chunk of change! If their regional blueprints are implemented as planned, the 6-county Sacramento regions will save \$16 billion by 2050. In the Los Angeles Region, the amount saved under blueprint is calculated to be \$48 billion by 2050. Sprawling development patterns also cost more to serve, due to added fire and police services and infrastructure and street maintenance. One study by Burchell, et. Al. estimated these costs to be twice as much for low density sprawl as for compact development.<sup>46</sup>**

Multi-family developments are crucial to meeting the housing needs of Merced's growing population. They need to be located in appropriate areas where services are readily available to serve the needs of residents in an efficient manner.

## **MIXED-USE / TRANSIT-ORIENTED DEVELOPMENT**

The long term economic vitality of the City is enhanced by maintaining housing opportunities that accommodate a diversely skilled labor force. At the same time, residential development must have adequate and appropriate services which are accessible. The balance between job growth, housing opportunity, and services not only supports stable economic growth in Merced, it also reduces vehicle trips for work commutes and service, and enhances the overall quality of life for Merced residents. For example, by providing services adjacent to or within industrial areas so that employees do not have to leave the area to eat lunch or run errands, the number of noon hour auto trips may be reduced.

The fundamental building block of the Plan is the Urban Village, a compact, mixed-use district that will accommodate projected growth, maintain Merced's present quality of life and help ensure its continued economic vitality. Villages achieve these goals by encouraging pedestrian and transit travel, and by minimizing single-use, low density developments that generate traffic congestion, air pollution, a scarcity of affordable housing, monotonous landscapes and poor utilization of environmental and land resources. The City of Merced has established the "Urban Village" model (also known as "Transit Ready Development") as the basic design concept governing urban form in new growth areas. Its principles should be applied as much as feasible in new growth areas throughout the Merced urban area.

## **GROWTH MANAGEMENT PLANNING**

"Leap-frog development" tends to be cost-prohibitive in these times due to the high up-front costs of extending utility lines, streets, etc., across undeveloped properties to outlying areas. Such development should be discouraged in most cases because of the service inefficiencies it creates. Areas within the City's Area of Interest can be added to the City's SUDP/SOI in the future if the criteria described in GP Policy UE-1.6 have been satisfactorily addressed, however. The purpose of these criteria is to ensure that including additional land within the City's SUDP/SOI will not interfere with the timely development of lands that are currently within the City's growth boundary.

## **COMMUNITY APPEARANCE**

Over the years, the City of Merced has developed a unique physical character and civic flavor. The City's compact form, tree-shaded streets, well-kept neighborhoods and extensive open space areas have contributed to its charm and attractiveness. The Courthouse Square and re-energized downtown commercial center have maintained their human scale which enhances the small town flavor of Merced even though the City has grown significantly in recent years. To preserve and enhance this positive community appearance, the City has traditionally committed to a policy of civic improvement and beautification.



## STRATEGY SC 2.1: COMPACT URBAN FORM / INFILL

**STRATEGY:** Foster Compact and Efficient Development Patterns to Maintain a Compact Urban Form

### ACTIONS FOR STRATEGY SC 2.1:

- SC 2.1.1:** Encourage new development in downtown to capitalize on existing infrastructure, access to public transportation and local services and shopping, including new high-speed rail facilities.
- SC 2.1.2:** Encourage cleanup and development of "brownfields" and other unused or defunct properties near existing public transportation and jobs.
- SC 2.1.3:** Encourage development on infill sites by amending the Zoning and Subdivision Ordinances to better accommodate such requests (General Plan Policy UE-1.2. - Implementing Action 1.2.a).
- SC 2.1.4:** Work with Merced County to ensure that existing unincorporated Rural Residential Centers in the Merced area are not expanded and no new Rural Residential Centers are established (General Plan Policy UE-1.2. - Implementing Action 1.2.b).
- SC 2.1.5:** Rural Residential Center Annexations: Establish annexation policies and outreach program regarding the annexation of the existing Rural Residential Centers (existing development on one-acre lots) (General Plan Policy UE-1.5. - Implementing Action 1.5.d).
- SC 2.1.6:** Evaluate for Multi-Family Housing Development (General Plan Policy H-1.1. - Implementing Action 1.1.a).
- SC 2.1.7:** Conduct a survey of vacant lands through the Geographic Information System (GIS). Develop strategies and incentives for encouraging their development with appropriate uses, including expedited processing and reduced fees (General Plan Policy L-3.2. - Implementing Action 3.2.a).

### ACTION DESCRIPTIONS

**Higher Residential Densities (SC 2.1.1 and 2.1.2):** The City will continue to promote the use of higher residential densities, especially small-lot single-family residential and multi-family residential, in order to make the most efficient use of land and maintain a compact urban form.

**Rural Residential Centers (SC 2.1.5):** The City will establish policies and possibly an outreach program to address when Rural Residential Centers should be annexed and the level of services to be provided.

**Multi-Family Site Evaluation (SC 2.1.6):** The City will complete an evaluation of vacant and underutilized parcels throughout the City to determine suitability and feasibility for potential multi-family development considering at least, but not limited to, location, size, circulation, and available

infrastructure. Staff will consider either an ordinance amendment to require development at a minimum density of at least 80 percent of permitted density or to encourage increased density through incentives such as reduced fees and priority processing. In addition, staff will work to educate the public and decision-makers about affordable housing, especially multi-family developments, to help alleviate “NIMBYism” when developments are proposed and to ensure decisions regarding developments are made based on adopted plans and policies.

## **STRATEGY SC 2.2: MIXED-USE / TRANSIT-ORIENTED DEVELOPMENT**

**STRATEGY:** Increase application of mixed-use land use and design concepts throughout the City.

### **ACTIONS FOR STRATEGY SC 2.2:**

- SC 2.2.1:** Encourage a diverse mix of commercial and service businesses that support the residents, and support the economic need of the community.
- SC 2.2.2** Encourage a mixture of complementary retail uses to be located together to create activity nodes and serve adjacent neighborhoods and to draw visitors from other neighborhoods and from outside the area (e.g. sports facilities).
- SC 2.2.3** Help bring about an expansion and diversification of the employment base to provide quality jobs for Merced residents.
- SC 2.2.4** Prepare an industrial development workforce housing nexus study.
- SC 2.2.5** Create a work/live ordinance to provide opportunities for reduced work-related commutes.
- SC 2.2.6:** **Village Core Zoning:** Create a new zoning category to correspond with the “Village Core Residential” land use designation for mixed densities in residential areas within walking distance of neighborhood commercial centers (General Plan Policy L-1.2 - Implementing Action 1.2.f). This code amendment should also include village commercial-core areas.
- SC 2.2.7:** **Business Park Zone:** Establish a new zoning designation called "business park" which would allow a mix of heavy commercial, "back office," and light industrial uses (General Plan Policy L-2.4 - Implementing Action 2.4.a).
- SC 2.2.8:** **Mixed Use Industrial Zone:** Consideration should be given to making changes to the Zoning Ordinance which allow for some commercial and service activities in and/or convenient to industrial areas (General Plan Policy L-2.4 - Implementing Action 2.4.d).
- SC 2.2.9:** **Bellevue Corridor Community Plan:** Create the Bellevue Corridor Community Plan.

## ACTION DESCRIPTIONS

**Encourage Mixed Use Development (SC 2.2.1):** Expand the use of mixed-use residential/office/retail developments in the City's core downtown and other appropriate commercial centers to support both affordable housing and economic development goals through priority permit processing. The City will also amend the Zoning Ordinance to allow residential uses as a principally permitted use in deference to the Redevelopment Agency's Preferred Land Use Map and Downtown Strategy and when mixed with commercial uses. The City will promote development consistent with the "Downtown Strategy." In addition, the City will consider an ordinance amendment to reduce the parking requirements for residential developments within the downtown area. The use of other incentives such as reduced fees, density bonuses, and a streamlined development process will be reviewed.

**Village Core Residential (SC 2.2.6):** The Urban Villages Concept calls for higher-density residential developments within walking distance of village commercial cores. A wide range of densities, including small-lot single-family, townhouses, and apartments, can be allowed in these "Village Core Residential" areas to achieve an overall average density of at least 10 units per acre. This residential development will help ensure greater support for transit and the economic viability of the commercial uses. These principles should be applied to most of the City's new growth areas and financial incentives explored for promoting their use.

### Transit Village Redevelopment

The City of Sacramento's 65th Street/Transit Village redevelopment project provides a 20-25 year plan for mixed use, transit-oriented development in East Sacramento. The goal of this project is to improve pedestrian and bicycle circulation, increase residents', shoppers', and workers' access to the city's light rail system and strengthen this neighborhood's connection to the nearby California State University, Sacramento. The project was examined using six different scenarios of varying densities and mixed uses. In 2003, the residentially focused, transit-oriented model predicted that households would drive 2,000 miles less per year compared to the existing zoning and existing use scenarios. This reduces each household's emissions by one ton of CO<sup>2</sup> yearly.<sup>24</sup>

***Village Core Commercial (SC 2.2.6):*** The Commercial Core of the Village plan provides the focus for service, employment, recreation, and entertainment within each Village area. It is vital that these core areas contain ample space to accommodate all necessary uses and activities and at the same time be highly accessible to surrounding residential areas by non-vehicular means. Core Commercial areas must be adjacent to a future transit stop. Street-level retail space should form a pedestrian-oriented “main street” that is accessible from the surrounding Village without using an arterial road. Shopping malls and centers should face shops onto streets that connect to the surrounding neighborhood without large intervening parking lots. The design of Core Commercial areas should encourage shopping enroute to the transit stop or by office workers during the day.

***Create a Business Park Zone (SC 2.2.7):*** The *Merced Vision 2015 General Plan* introduced a new land use designation, “Business Park.” Planned Development zoning has been used on an interim basis, but a “business park” zone should be established which would allow a mix of heavy commercial, “back office,” and light industrial uses. By allowing this mix of uses, the number of auto trips may be reduced within these areas. The provision for limited retail could also be explored during this effort.

***Code Amendment to Allow Mixed Use Industrial Zones (SC 2.2.8):*** Because of increasing air quality and traffic concerns, it is becoming desirable to provide commercial and service activities convenient to industrial activities for easier accessibility by industrial employees. If restaurants, health clubs, daycare centers, auto services, some offices, and limited retail activities that draw primarily from industrial areas could be located conveniently to such zones, it could have substantial traffic and air quality benefits to the community as well as making it easier for industrial employees to conduct business, run errands, etc. without having to drive across town. The City currently does not encourage or even allow in some cases these kinds of uses. Changes to the Zoning Ordinance will be necessary to achieve this objective.

***Bellevue Corridor Community Plan (SC 2.2.9):*** Recently, the City of Merced received a planning grant from the California Strategic Growth Council to establish a plan focused on establishing implementation tools of a variety of sustainability themes, including:

- Develop “Complete Streets” General Plan Policies;
- Develop Urban Village Form-Based Code Concepts;
- Create Bellevue ROW Standard Design Templates; and,
- Create "Transit Priority Project" Sites, (per SB 375, CEQA is waived).

The Bellevue Corridor Community Plan (BCCP) has the potential to foster development models resulting in less GHG emissions than traditional suburban development patterns. The boundary of the BCCP abuts UC Merced, who has agreed to partner with the City in developing the plan.

## STRATEGY SC 2.3: GROWTH MANAGEMENT PLANNING

**STRATEGY:** Create Practical Tools to Implement Growth Management-related Policies of the City's General Plan.

ACTIONS FOR STRATEGY SC 2.3:

- SC 2.3.1:** **Public Facilities Financing Plan and Public Facilities Impact Fees:** Consider changes to the Public Facilities Financing Plan and Public Facilities Impact Fee program to reflect lower fees for “in-fill” development and new development within the 2015 SUDP vs. areas being added to the SUDP/SOI in the 2030 General Plan (General Plan Policy P-1.3 - Implementing Action 1.3.f).
- SC 2.3.2:** **Infrastructure Encouragement Zones:** Adopt guiding language, based on growth management policies, that define the circumstances and methods for reimbursement of developer installed public infrastructure.
- SC 2.3.3:** Explore and develop incentives for high performance design and construction in the private sector.

### ACTION DESCRIPTIONS

**Public Facilities Financing Plan and Public Facilities Impact Fees (SC 2.3.1):** The City should consider whether lower impact fees should be offered to those developments that are closer to current City infrastructure and services, such as “in-fill” development within the existing City limits and within the existing 2015 SUDP. This would discourage “leapfrog” development within the SUDP/Sphere of Influence. This would also be in keeping with greenhouse gas reduction and agricultural preservation goals to discourage City development far from existing infrastructure.

## STRATEGY SC 2.4: COMMUNITY APPEARANCE

**STRATEGY:** Maintain and Enhance the Unique Community Appearance of Merced

ACTIONS FOR STRATEGY SC 2.4:

- SC 2.4.1:** Encourage joint City and County cooperation in establishing land use and development standards along all major gateways to the City (General Plan Policy UD-2.2, Implementing Action 2.2.a).
- SC 2.4.2:** Expand the City's programs for undergrounding utility lines and require all new utility lines to be placed underground (General Plan Policy UD-2.2, Implementing Action 2.2.e).
- SC 2.4.3:** Support merchant groups that initiate improvement programs that make commercial centers more attractive and more efficient (General Plan Policy UD-2.2, Implementing Action 2.2.h).



**SC 2.4.4:** Continue to support the long-term beautification and preservation of downtown commercial areas (General Plan Policy UD-2.2, Implementing Action 2.2.i).

**SC 2.4.5:** ***Revitalized Urban Villages:*** Use Urban Village Design Concepts in Neighborhood Revitalization Programs (General Plan Policy UD-2.1). Identify urban villages in older parts of Merced and revitalize them through application of Urban Village development concepts, by:

- Identify existing or potential neighborhood core areas that could serve as a Core Commercial area (General Plan Policy UD-2.1, Implementing Action 2.1.a).
- Evaluate public transit alternatives and service levels within existing neighborhoods (General Plan Policy UD-2.1, Implementing Action 2.1.b).
- Identify needed neighborhood level public and quasi-public service facilities within existing neighborhoods (General Plan Policy UD-2.1, Implementing Action 2.1.c).

## **STRATEGY SC 2.5: COMMUNITY DESIGN DEVELOPMENT REVIEW POLICIES**

(See Actions listed in Appendix E)



## Value: Quality Natural Resources

### Goal 3

5% of the GHG Emissions targeted for reduction will be accomplished through water management practices.

### Goal 4

10% of the GHG Emissions targeted for reduction will be accomplished through programs and actions that protect the quality of Merced's air resources.

### Goal 5

1% of the GHG Emissions targeted for reduction will be accomplished through waste reduction programs.

## Goal 3. Water Conservation and Technology (WC)

The *City of Merced 2010 Urban Water Management Plan* recommends that in order for the City to achieve the projected water conservation target of 20% reduction in water use per capita by 2020, the City should prioritize its efforts towards implementing its water conservation programs. The CAP seeks to reduce water-related emissions from three activities: 1) water conservation and technology; 2) reduced pumping, and, 3) creating water efficient landscapes, all of which seek to sustain water supplies for use with successful businesses and attractive landscapes, while reducing maintenance costs and higher user fees due to higher demands on a shrinking water supply.

### Water Conservation and Technology

The *City of Merced 2010 Urban Water Management Plan* recommends that in order for the City to achieve the projected water conservation target of 20% reduction in water use per capita by 2020, the City should prioritize its efforts towards implementing its water conservation and technology programs.<sup>8</sup>

Conservation efforts focus on practices and habits, and achievements can backslide, whereas technology places infrastructure which, over time, does not reverse gains. Both approaches are recommended.

Current programs include:

**School Education Program:** The *Water Conservation School Education Program* requires water suppliers to implement a school education program that includes providing educational materials and instructional assistance. The City's school education program consists of speaking engagements at the City's grade schools and presence at Career Days at local middle schools, high schools, and colleges. The City also supplies local schools and colleges with materials illustrating water conservation tips and techniques. The City has committed to its public information program as an ongoing effort.<sup>8</sup>



**Water Waste Prohibition Program:** The City implemented a *Water Waste Prohibition Program* (Ordinance 1842) on January 18, 1993, which prohibited the waste of water through prohibition of the following activities: (a) Washing of sidewalks, driveways, and other outdoor surfaces; (b) Washing of external building or trailer walls; (c) Non-recirculating fountains; and, (d) use of water from the City's distribution system for non-domestic purposes when another adequate source of water is available. The ordinance also includes mandatory conservation strategies, including replacement of broken plumbing fixtures and sprinklers, limited irrigation hours, and restriction of outdoor irrigation by day of week (based on odd and even street address). The ordinance also included a prohibition on waste of water for reasons not stated without reasonable purpose. Violators of the water conservation prohibitions can be penalized through disconnection or metering at the violator's expense.<sup>8</sup>

**Public Information Program:** The *Water Conservation Public Information Program* consists of distributing information to the public through a variety of methods including brochures included with utility bills, press releases via radio and newspaper, school curriculum, educational flyers, commercials on television and in theatres, water conservation suggestions and videos on its webpage, and providing economical water conservation kits, low-flow shower heads or faucet aerators, toilet tank banks (water displacement devices), shower timers, and leak detection tablets.<sup>8</sup> The water outreach and education program involves participation and education at local community events, such as the County Fair, the weekly Summerfest, Earth Day Celebration, and Dia del Nino.<sup>9</sup> The City has committed to its public information program as an ongoing effort.

**Leak Detection and Repair Program:** The water distribution system consists of approximately 280 miles of pipe. The City's program involves leak detection and repair focusing primarily on areas with a high probability for leakage. The City repairs approximately 100 leaks per year, although this number was as high as 800 leaks per year while the City transitioned from polybutylene service lines to copper. Since the 2005 UWMP, the City has completed a program to replace all polybutylene service connections with copper connections. As part of the replacement program, pipelines nearby to the failing polybutylene service connections were also surveyed and repaired as needed. Leaks are repaired in a timely manner, whether they are service line or main-line leaks. The City's distribution system also contains some sand-cast water mains which City operations staff plan for replacement in coordination with street upgrades.<sup>8</sup>

**Water Metering Program:** Since 1992, the City has required meters on all new service connections to allow billing by volume of use. All commercial businesses are on water meters, and almost all multifamily residential dwelling units and public parks are metered. Approximately half of the 20,000 residential customers are on a water meter, while the other half is receiving water at a flat rate. As of 2009, the City maintained approximately 9,787 water meters, which represents approximately half of the total connections in the service area. The City classified these meters into the following categories: 6,797 single family residential, 1,519 multi-family residential, 1,144 commercial/institutional, 34 industrial, and 293 landscape irrigation.<sup>8</sup> The State of California mandates that by 2025, all residential dwellings be metered; the City's goal is to make that happen by 2015.<sup>9</sup>



**Residential Plumbing Retrofit Program:** The *Residential Plumbing Retrofit Program* consists of installing physical devices to reduce the amount of water used or to limit the amount of water that can be served to the customer. In accordance with State law, low-flow fixtures have been required on all new construction since 1978. In addition, State legislation enacted in 1990 requires all new buildings after January 1, 1992, to install Ultra-Low-Flush Toilets (ULFT). Several studies suggest that water use savings resulting from miscellaneous interior retrofit fixtures can range between 25 and 65 gpd per housing unit. The studies also suggest that installation of retrofit fixtures in older single-family homes tend to produce more savings, while newer multi-family homes tend to produce fewer saving per housing unit. The City offers free low-flow shower heads and other types of low flow retrofit kits to customers at public outreach events and at the Finance and Public Works counters upon request.<sup>8</sup>

## Reduce Groundwater Pumping

Groundwater pumping costs and emissions can be reduced by using other water sources and by retaining pumped water otherwise lost to leaks.

By using surface-water for uses such as landscape maintenance, the City can reduce its demand on regional groundwater supplies and reduce associated GHG emissions to run water pumps. The existence of the MID irrigation system agricultural water use system in the expanding urban area provides a significant future opportunity for the City to develop innovative means of landscape maintenance in addition to meeting some of the area's groundwater recharge needs.

The development of expanded wastewater treatment systems should incorporate beneficial use of treated wastewater.





## STRATEGY WC 3.1: WATER CONSERVATION AND TECHNOLOGY

**STRATEGY:** Reduce per capita water use by 20% by 2020, in part, through Water Conservation Efforts.

### ACTIONS FOR STRATEGY WC 3.1:

- WC 3.1.1:** Continue implementation and enforcement of the City's Water Shortage Regulations (General Plan Policy OS-5.1, Implementing Action 5.1.a).
- WC 3.1.2:** Implement a voluntary *Residential Water Audit Program* to all customers within the City of Merced.
- WC 3.1.3:** Enhance the existing *Residential Plumbing Retrofit Program* through increased retrofits and rebate efforts to all customers within the City of Merced.
- WC 3.1.4:** Implement a voluntary *High Efficiency Washing Machine Rebate Program* to all customers within the City of Merced.
- WC 3.1.5:** Implement a voluntary *Conservation Program for Commercial, Institutional, and Industrial (CII) Accounts* to all customers within the City of Merced.
- WC 3.1.6:** Consider a tiered water rate structure within the City of Merced.
- WC 3.1.7:** Implement a voluntary *Residential Ultra-Low-Flush Toilet Replacement Program* to all customers within the City of Merced.
- WC 3.1.8:** Implement the *Large Landscape Conservation Program* for city-owned properties.
- WC 3.1.9:** Enhance the existing *Water Metering Program* through incentives and/or ordinance for all City of Merced customers who are not currently connected to a water meter.

### ACTION DESCRIPTIONS

**Water Audit Program (WC 3.1.2):** This program consists of offering water audits to single-family and multi-family residential customers. Audits include reviewing water usage history with the customer, identifying leaks inside and outside the home, and recommending improvements.<sup>8</sup>

**High Efficiency Washing Machine Rebate Program (WC 3.1.4):** This program provides financial incentives, typically in the form of rebate offers, to qualifying customers who install high-efficiency washing machines in their homes. Merced Irrigation District (MID), within whose service area the City's service area falls, operates a high efficiency washing machine rebate program for their electricity customers. The program offers a \$75 rebate for purchase of an energy saving clothes washing machine or dishwasher. While the program is a part of MID's energy conservation rebate program, MID estimates the washing machines provide a water conservations savings of 40 percent when compared to conventional clothes washing machines. In addition, PG&E offers a similar rebate to its customers in the

area. The program offers a \$50 rebate for purchasing a high efficiency clothes washer, and up to \$125 on qualifying clothes washers. All clothes washers must meet specific PG&E efficiency requirements.<sup>8</sup>

**Conservation Program for Commercial, Institutional, and Industrial (CII) Accounts (WC 3.1.5):** This program consists of ultra low flush toilet (ULFT) replacements in commercial, institutional, and industrial (CII) facilities and either surveys of water use for CII accounts or performance targets for CII accounts. Additional CII related conservation programs may involve turf fields, smart irrigation timers, and industrial process water use reductions.<sup>8</sup>

**Tiered Water-Rate Structure (WC 3.1.6):** While the City implements commodity metering for all commercial, industrial, and multifamily customers, the City's rate structure does not currently implement a tiered rate structure. The City plans to consider a tiered rate structure during its upcoming rate study.<sup>8</sup>

**Residential Ultra-Low-Flush Toilet Replacement Program (WC 3.1.7):** This program will provide incentives for voluntary replacement of existing toilets with ULFTs. State legislation requires the installation of efficient plumbing in new construction and, effective in 1994, required that only ultra low flow toilets (ULFTs) be sold in California.<sup>8</sup>

**Water Metering Program (WC 3.1.9):** This enhanced program applies to retrofitting any existing unmetered connections. Most of the City's unmetered connections are to single family residential (SFR) homes. Prior to implementing this Strategy, the City will evaluate two options for retrofitting existing unmetered connections. The first option is a program to replace all unmetered connections and the second is an ordinance to require retrofit upon title transfer.<sup>8</sup>

## STRATEGY WC 3.2: REDUCE GROUNDWATER PUMPING

**STRATEGY:** Reduce per capita water use by 20% by 2020, in part, through increased use of water from non-groundwater sources to reduce the need for groundwater pumping.

### ACTIONS FOR STRATEGY WC 3.2

- WC 3.2.1:** Pursue innovative programs to reduce the demand for potable ("drinkable") water (General Plan Policy P-3.1, Implementing Action 3.1.a).
- WC 3.2.2:** Perform a *System Water Audit* when all customers are connected to meters.
- WC 3.2.3:** Reach a long-term water transfer agreement with the Merced Irrigation District for the exchange of tertiary treated wastewater effluent for canal surface water.
- WC 3.2.4:** Work cooperatively with MID to preserve and enhance its surface water delivery system (General Plan Policy P-3.2, Implementing Action 3.2.b).

- WC 3.2.5:** Explore the use of MID water resources for applications that do not require treated water to reduce demand on the regional groundwater supplies and reduce costs of water treatment (General Plan Policy P-3.2, Implementing Action 3.1.c).
- WC 3.2.6:** Consider the Use of Reclaimed Water to Reduce Non-Potable Water Demands Whenever Practical (General Plan Policy P-4.2).
- Consider conducting a reclaimed water market study to identify potential users (General Plan Policy P-4.2, Implementing Action 4.2.b).
  - Consider preparing a plan for the use of reclaimed water which evaluates the facilities and costs required to serve potential users, determines required capacities of facilities, and presents an implementation plan (General Plan Policy P-4.2, Implementing Action 4.2.c).
  - Explore the use of distributed reclaimed water improvements for local industrial, commercial, and residential buildings, such as the collection of rainwater and use of gray-water, as well as state regulations that would support or hinder subsequent efforts by the City to implement such improvements.
- WC 3.2.7:** Increase water storage capacity to allow for off-peak pumping of water.
- WC 3.2.8:** Examine the benefits of energy efficiency of water delivery and treatment systems by:  
1) Upgrade the mechanical and electrical systems at water and wastewater facilities; and, 2) Participate in local energy efficiency incentive programs to upgrade pump efficiency.

#### ACTION DESCRIPTIONS

A **System Water Audit (WC 3.2.2)** is a process of accounting for water use throughout the municipal water system in order to quantify the unaccounted-for water. Unaccounted-for water is the difference between metered production and metered usage on a system-wide basis. As the City is not fully metered, a system-wide audit has not yet been performed, and the City has no knowledge of when the last system-wide water audit was conducted.<sup>8</sup>

**Water Transfer Agreement (WC 3.2.3):-** The City of Merced and the Merced Irrigation District (MID) are considering a long-term transfer agreement for the exchange of tertiary treated wastewater effluent for MID canal water (surface water). Under this scenario, the City would use surface water from the Merced River to irrigate City parks. The potential transfers or exchanges provide the benefit of reduced groundwater pumping, which could help the City achieve its greenhouse gas and water conservation targets. MID is currently charging \$1,000 per acre to connect parks and schools to MID canal water.<sup>8</sup>

## STRATEGY WC 3.3: WATER EFFICIENT LANDSCAPES

**STRATEGY:** Reduce per capita water use by 20% by 2020, in part, through water efficient landscapes.

ACTIONS FOR STRATEGY WC 3.3:

**WC 3.3.1:** Consider value in performing landscape audits for large commercial customers.

**WC 3.3.2:** Examine the costs and benefits in reduced demand for potable water by converting industrial and irrigation demands to recycled water wherever practical and cost-effective.

### ACTION DESCRIPTION

The **Large Landscape Conservation Program (WC 3.3.1)** consists of assigning reference evapotranspiration (ET<sub>o</sub>) - based water budgets to accounts with dedicated irrigation meters and providing water-use audits to accounts with mixed-use meters. The City has placed an irrigation control system in the “G” Street Railroad Undercrossing Project that considers weather and ET<sub>o</sub> conditions to reduce water consumption. This technique can also be applied to large landscaped areas such as parks and landscaped medians.<sup>8</sup>



## STRATEGY WC 3.4: WATER CONSERVATION DEVELOPMENT REVIEW POLICIES

(Actions are listed in Appendix E)

## Goal 4. Protect Air Resources (AR)

### Reduced Vehicle Trips

In addition to the bike, pedestrian, and transit actions listed under the *Building Healthy Communities* value, there are multiple ways to reduce the number of vehicle trips in a community. For example, the shipping of food is energy intensive; increased demand and production of locally sourced foods can reduce shipping needs, support the local farm economy, and help to conserve local farmland.

### Clean Trips - Clean Vehicles

For those trips that cannot be reduced or replaced by less polluting methods, the emissions from these trips can be reduced, for example, by improved traffic flow and by limiting idling.

The City of Merced aspires to be a leader among cities when it comes to a Green Fleet. This City project will reduce the City's carbon footprint, conserve energy, and minimize expenses to the City's citizens as well as create higher-quality jobs.

The City's green fleet program includes staff development and purchase of electric and/or hybrid vehicles. The City will also purchase equipment for vehicle maintenance and will provide necessary maintenance and repair training for fleet staff. The City has taken delivery of 3 Ford Hybrid Escape vehicles as well as the delivery of 3 alternate fuel Garbage trucks in which the cost differential versus the purchase of gasoline-powered vehicles has been offset by EECBG grant funds. Eventually, forty seven diesel-powered trucks will be replaced by CNG or CNG hydraulic assist hybrids, and CMAQ funds through MCAG will purchase an additional 18 hybrid vehicles, all of which will be small SUVs or sedans. In addition, a portion of funds would go towards: 1) providing mechanic training of alternative power-fleet vehicles; and, 2) planning, policy change, and monitoring, for example, identifying ways to minimize emissions from vehicles that cannot be immediately replaced.

Merced is home to numerous truck routes and industrial parks that are utilized by heavy-duty trucks. While an early-action item of AB 32 seeks to reduce GHG emissions from these vehicles, local efforts can supplement state efforts.





## STRATEGY AR 4.1: REDUCED VEHICLE TRIPS

**STRATEGY:** Reduce per capita Vehicle Miles Travelled by 5% by 2020.

### ACTIONS FOR STRATEGY AR 4.1:

- AR 4.1.1:** Continue to support, encourage, and implement to the extent feasible, innovative employer-based trip reduction programs for their employees (General Plan Policy SD-1.5, Implementing Action 1.5.a). As a first step, by example, implement a Travel Demand Management program applicable to the City of Merced, using the City's participation in "eTRIP" (Employer Trip Reduction Implementation Plan) as a guide, and which should include:
- Support the use of teleconferencing and internet-based training opportunities in lieu of employee travel to conferences and meetings when feasible (General Plan Policy SD-1.5, Implementing Action 1.5.c).
  - Make use of telecommuting programs as part of their trip reduction strategies (General Plan Policy SD-1.5, Implementing Action 1.5.d).
  - Employee Incentives to take transit and carpool.
  - Preferred parking for carpools.
- AR 4.1.2:** Encourage the development of state of the art communication infrastructure linked to the rest of the world (General Plan Policy SD-1.5, Implementing Action 1.5.e), for example, the Development Services Department's "Electronic Plan Check Project."
- AR 4.1.3:** Implementing "Complete Streets" policies to ensure the Needs of Bicyclists, Pedestrians, and the Disabled are considered in the transportation element of any new capital improvement or development project.
- AR 4.1.4:** Coordinate the different modes of travel to enable users to transfer easily from one mode to another.
- AR 4.1.5:** Increasing the use of ridesharing as an alternative to single occupancy driving.
- AR 4.1.6:** Complete the City's network of bicycle and pedestrian transportation routes and allow for new forms of non-motorized transportation (General Plan Policy T-2.9, Implementing Action 2.9.d).
- AR 4.1.7:** Explore the feasibility of establishing a local car-share program.
- AR 4.1.8:** Examine opportunities to reduce standard-design City rights-of-way and to receive the benefits made available by use of narrow streets.
- AR 4.1.9:** Work with MCAG to construct park-and-ride lots in the City and elsewhere to reduce vehicle trips.

**AR 4.1.10:** Encourage healthy food choices through the encouragement of farmers markets and community garden. (General Plan Policy SD-4.2, Implementing Action 4.2.b). Develop programs and policies to encourage community based farms and gardens, including demonstration projects

#### ACTION DESCRIPTIONS

**Employer Trip Reduction Implementation Plan ( eTRIP ) (AR 4.1.1)** is a set of strategies an employer chooses that will encourage employees at worksites to use alternative transportation and ridesharing for their morning and evening commutes. Each eTRIP Strategy has a point value, and an employer's eTRIP needs to meet the point targets specified in the rule. The eTRIP is phased in over a period of three years. Phase 1 includes "Marketing" and "Program Support" strategies to increase program awareness to make ridesharing and alternative transportation easier for employees. The Phase 2 "Services and Facilities" strategy includes strategies deployed in the workplace so that employees are less likely to need to travel offsite for personal business during the workday. Phase 3, "Transportation, Alternative Schedules, and Incentives," includes a wide range of options such as comprehensive carpool and vanpool programs, monetary incentives for ridesharing, subsidized transit passes, and telecommuting.



Employers will submit Commute Verification results and eTRIP revisions by March 31, starting in 2015. As of July 2011, the following employers in the City of Merced have eTRIP programs: City of Merced Public Works; Golden Valley Health Center; McLane Pacific; City of Merced Civic Center; Merced County Human Services; Merced County Public Health; Merced County Administration; Merced Service Center + IS; AT&T; Malibu Boats, LLC \*; and Finline Ind. \* (\*have less than 100 employees).

**Development Services Department's Electronic Plan Check Project (AR 4.1.2):** This project will develop, purchase, and administer an electronic plan review and document storage/retrieval system, to be integrated into the City of Merced's Inspection Service Division that will allow for all construction plans, building permits, requests for information, change orders, and other documents large or small to be submitted, reviewed for Building Code compliance, and returned electronically, alleviating the need for vehicle usage for pickup and delivery. Plan archival and retrieval, being stored electronically, would further reduce vehicle usage, thereby reducing emissions as well as providing various other energy efficiency savings and benefits.

**Carshare Programs (AR 4.1.7):** Why buy, insure, and hassle storage and repair of a car when all you want to do is drive? For a vehicle use fee, these costs and activities can be managed by others, and allow you to enjoy the use of a car when you need it. For example, the City of Philadelphia and PhillyCarShare instituted a novel car sharing system that includes both local residents and government employees. The program replaced 330 municipal vehicles and saved the City \$2 million each year. In the community, 1,200 citizen vehicles were replaced saving residents \$5.5 million in costs and reducing vehicle travel by 8.2 million fewer miles per year.<sup>24</sup> Although Merced's population is low, there may be partnership opportunities to make a carshare program viable.

**Narrower Streets (AR 4.1.8):** Research contracted by the LGC in the late 1990s demonstrated that in a hot summer climate, the temperature in a neighborhood with wide, unshaded streets can be ten degrees higher than in a similar neighborhood with narrow, tree-shaded streets. A lower ambient temperature can reduce or even eliminate the need for air conditioning. Other studies show how wide streets encourage speeding and increase pedestrian fatalities. In the Institute of Transportation Engineers (ITE) Journal in December 2002, a study entitled “Low Speed Design Criteria for Residential Streets” demonstrated how residential streets wider than 32 feet tend to increase speeds of motorists by three to four miles per hours per foot of additional width, and influence motorist to drive 30 to 40 mph in residential areas – a speed that could prove fatal to pedestrians if hit by a car.<sup>32</sup>

## **STRATEGY AR 4.2: CLEAN TRIPS – CLEAN VEHICLES**

### **STRATEGY: Deploy a Comprehensive Program to Reduce Vehicle Emissions**

#### **ACTIONS FOR STRATEGY AR 4.2:**

- AR 4.2.1:** **Green Fleet:** Fleet vehicle operators should evaluate alternatives which include replacing or converting conventional fuel vehicles with clean fuel vehicles as rapidly as feasible within the financial constraints of the City (General Plan Policy SD-1.5, Implementing Action 1.5.b), for example, the City’s “Build a Green Fleet Program.”
- AR 4.2.2:** Adopt a City-fleet fuel-efficiency standard and seek to meet standard by 2020.
- AR 4.2.3:** **Traffic Signalization:** Particular effort should be placed on further improvement of traffic signalization to reduce stop-and-go traffic, which causes excess vehicle emissions from excessive idling.
- AR 4.2.4:** **Reduce Idling:** Identify actions that result in win-win outcomes for the community and community members, and implement through feasible and reasonable means, which may or may not include an ordinance amendment.
- AR 4.2.5:** Establish City Design Standards for traffic roundabouts sited on local and collector street intersections.
- AR 4.2.6:** Consider establishment of a policy of purchasing fuel efficient new City alternative-fuel vehicles.
- AR 4.2.7:** Retire or sell old and underutilized vehicles.
- AR 4.2.8:** Explore the use of “light vehicle” networks, such as neighborhood electric vehicle (NEV) systems.
- AR 4.2.9:** Explore methods, and implement where appropriate, actions to reduce heavy-duty diesel emissions. For example, support clean heavy-duty fleets by facilitating the conversion of heavy-duty trucks to clean fuels while also encouraging the provision of alternative fuel infrastructure and operational requirements.

## ACTION DESCRIPTION

**Traffic Signalization (AR 4.2.3):** Particular effort should be placed on further improvement of traffic signalization to reduce stop-and-go traffic, which causes excess vehicle emissions from excessive idling, such as signal synchronization. This program requires various strategies and equipment, including optimized signal timing, interconnected and coordinated signals, traffic-actuated signals, computer-based controls, channelized intersections, and additional turn lanes. These efforts will allow traffic to pass more efficiently through congested areas.

**Reduce Idling (AR 4.2.4):** Consider various methods to reduce vehicle idling in the following sectors: commercial vehicles, delivery vehicles, construction vehicles, road design and operations. For example, the “G” Street Undercrossing Project significantly reduced idling from all sources.

## STRATEGY AR 4.3: REDUCE NON-VEHICULAR EMISSIONS

**STRATEGY: Promote Opportunities for Residents to Benefit from Small-Engine Retrofit Programs**

ACTIONS FOR STRATEGY AR 4.3:

**AR 4.3.1:** Promote and participate in the Clean Green Yard Machine (CGYM) Program

## ACTION DESCRIPTION

**CGYM Program (AR 4.3.1):** The CGYM Program is a San Joaquin Valley Air Pollution Control District incentive program for San Joaquin Valley residents to trade in their existing, functional gasoline-powered lawnmower for a new cordless, electric lawnmower. In Fall 2010, the District distributed discount vouchers to residents in every Valley county to replace over 2,100 gas-powered mowers with new cordless, electric models at substantially reduced prices. In Spring 2011, the Board accepted \$183,661 from the California Air Resources Board for the District’s Clean Green Yard Machine program, bringing the total for the next phase of this successful lawnmower replacement program to \$783,661 to provide more vouchers.

## STRATEGY AR 4.4: AIR RESOURCE DEVELOPMENT REVIEW POLICIES

(Actions are listed in Appendix E)

## Goal 5: Waste Reduction

### Reduce, Reuse, and Recycle

State law mandates that the waste stream be reduced significantly and that local governments implement programs and activities to accomplish this objective. The City of Merced deems that it is in the City's long term interest to support efforts to reduce the amount of solid waste deposited in the Merced County Regional Waste Management Authority's landfill sites and support private and public recycling efforts.



### Recycling Ordinance

Since January 2005, by law, the City of Seattle has prohibited the disposal of certain recyclables from residential, commercial, and self-haul garbage. The recycling ordinance is aimed at eliminating recyclable or compostable paper, cardboard, aluminum cans, plastic bottles, and yard debris that had constituted approximately 25 percent of the city's garbage. The city hopes the ordinance will save residents and businesses as much as \$2 million per year and keep future garbage costs low, as well as help to reverse the recent decline in Seattle's recycling rates. The Strategy is projected to achieve an annual reduction of 260,000 tons of eCO<sub>2</sub>.<sup>24</sup>



## STRATEGY WR 5.1: REDUCE, REUSE, AND RECYCLE

**STRATEGY:** Continue Efforts to Increase the City’s Waste Diversion Rate, and Aim to achieve a 65% Diversion Rate by 2020.

### ACTIONS FOR STRATEGY WR 5.1:

- WR 5.1.1:** Support the private sector, wherever possible, to develop methods for the reuse of inert materials (concrete, asphalt, and other building materials waste) which currently use valuable landfill space and increasing resource and material recovery from solid wastes (General Plan Policy P-6.1, Implementing Action 6.1.a). For example, establish “Building Materials Reuse Warehouse” for community construction and demolition use.
- WR 5.1.2:** If needed, find a location(s) for a local recycling drop-off center and household hazardous waste facility. Support community drop-off, buy-back, and collection.
- WR 5.1.3:** Develop a volunteer “Master Recycler” program open to the public, with field work, field trips, projects, and speaker series. Volunteers would promote conservation and recycling throughout the community by example and through outreach projects.
- WR 5.1.4:** Establish a reuse campaign for both businesses and residents establishing partnerships with and promoting thrift shops and reuse stores. Establish and/or promote materials exchange programs and include a program to divert bulky items from landfills.
- WR 5.1.5:** Implement the commercial recycling requirements of the Scoping Plan of AB 32.
- WR 5.1.6:** Implement the Green Code Construction and Demolition requirement to recycle construction materials. Support efforts to increase recycling rates as markets for these goods improve. Assist contractors and builders in locating C&D materials recovery facilities (MRFs), materials exchange opportunities, and other reuse and recycling sources.
- WR 5.1.7:** Develop a recycling program to provide recycling opportunities at special events; the City should implement such program at City sponsored or hosted events.
- WR 5.1.8:** Form a partnership with local schools and business that encourages waste reduction, recycling, composting, and food garden programs.
- WR 5.1.9:** Develop and implement a waste audit program.
- WR 5.1.10:** Within a reasonable period of time from adoption of General Plan, the City shall consider establishing incentives to foster increased participation in residential recycling and green waste diversion.

- WR 5.1.11:** Within a reasonable period of time from adoption of General Plan, the City shall consider instituting a program to evaluate major waste generators and to recommend recycling opportunities for their facilities and operations.
- WR 5.1.12:** The City shall continue to partner with the California Department of Recycling Resources and Recovery (CalRecycle) to participate in waste diversion and recycling programs such as the tire collection and recycling program, and community recycling education.
- WR 5.1.13:** Within a reasonable period of time from adoption of General Plan, the City shall consider instituting residential, restaurant, and institutional food waste segregation and recycling incentive-based program, to reduce the amount of organic material sent to landfills.

## **STRATEGY WR 5.2: WASTE REDUCTION DEVELOPMENT REVIEW POLICIES**

(See Actions in Appendix E)



## Value: Clean Energy Resources

### Goal 6

**23% of the GHG Emissions targeted for reduction will be accomplished through utilization of renewable resources.**

### Goal 7

**30% of the GHG Emissions targeted for reduction will be accomplished through energy conservation habits and equipment.**

## Goal 6: Increase the Use of Renewable Energy Sources (RE)

### Renewable Energy Systems

In the United States, heating, ventilation, and air conditioning (HVAC) systems account for over 25 percent of the energy used in commercial buildings and nearly half of the energy used in residential buildings. Solar heating, cooling, and ventilation technologies can be used to offset a portion of this energy.

Electricity generated from renewable energy sources is often referred to as “green power.” Unlike fossil fuel-based power, these sources of energy emit no or low global warming pollutants. Green power can include electricity generated exclusively from renewable resources including wind, hydro-electric, or solar power - or electricity produced from a combination of fossil and renewable resources. Cities can source renewable energy through utilities offering green power programs, through the purchase of renewable energy certificates called Green Tags or by installing on-site renewable technologies, such as solar panels.<sup>24</sup>

The California Energy Commission’s New Solar Homes Partnership (NSHP) is helping cities in their quest to use solar power with a new online toolkit that encourages local home buildings to install solar electric photovoltaic (PV) systems on new energy efficient homes, and includes case studies that document how cities have used the toolkit strategies successfully. For example, the NSHP recommends the use of an energy finance district authorized by AB 811, otherwise known as the PACE program, to fund solar energy projects. Local governments that establish AB 811 programs make low-interest loans to property owners for energy upgrades, then collect payments through property taxes. Because AB 811 programs are voluntary, property taxes remain unchanged for property owners that don’t participate.<sup>43</sup>





## STRATEGY RE 6.1: RENEWABLE ENERGY SYSTEMS

**STRATEGY:** Increase Reliance on Local Renewable Energy Sources and Reduce Emissions by 50,000 CO<sub>2</sub> Equivalent Tons through this Strategy by 2020.

### SOLAR-RELATED ACTIONS FOR STRATEGY RE 6.1:

- RE 6.1.1:** Consider to develop a renewable energy strategy for residential, commercial, and industrial uses that encourages installation of solar energy systems (thermal and photovoltaic) through streamlined permit procedures, optional CALGreen Tier 1 measures, adoption of incentives, or a municipal finance district program that provides a low-risk option for property owners to invest in on-site renewable energy installations.
- RE 6.1.2:** Develop and implement solar hot water and space heating incentive program, consistent with recently-enacted Assembly Bill AB1470 and the California Solar Initiative solar water heating pilot program. Target 500 residential systems equivalent, with estimated savings of 500 metric tons per year.
- RE 6.1.3:** Explore methods to encourage new commercial and industrial land uses greater than a certain size to utilize on-site renewable energy systems to offset a minimum percentage of the projected building energy use. Renewable energy systems may include energy generated by solar, wind, geothermal, water, or bio-based energy capture systems.
- RE 6.1.4:** Work with MID, PG&E, and local solar businesses to offer incentives to install solar hot water systems for new pool installations or renovations.

### BIO-FUEL-RELATED ACTIONS

- RE 6.1.5:** Install methane-powered electric generators at the City's WWTP when feasible. Take interim steps necessary to achieve this goal.
- RE 6.1.6:** Work toward enabling B20 Biodiesel to fuel parts of the City's Vehicle Fleet.

### OTHER-RELATED ACTIONS

- RE 6.1.7:** Adopt zoning allowances for renewable energy generators, for example, residential wind power and solar panels.
- RE 6.1.8:** Encourage community partners to finance and install renewable systems on large-scale private facilities.
- RE 6.1.9:** Establish energy financing districts (AB 811); offer renewable energy system financing to small commercial properties.
- RE 6.1.10:** Explore options to allow a revolving loan fund for community investment in renewable energy.



**RE 6.1.11:** Examine possible regulations on construction of new peaker plants.

**RE 6.1.12:** Support geothermal and grey-water plumbing options for development projects.

#### ACTION DESCRIPTION

**Methane-Powered Electric Generators (RE 6.1.5):** The City of Merced performed a feasibility study to determine the potential uses of methane at the City's wastewater treatment plant (WWTP). Although methane-powered electric generators could not be constructed due to the configuration of the WWTP, it was feasible to install natural gas/methane-fired boilers, which was accomplished. The City of Merced aims to install a grease receiving station, but first needs to determine if adequate amounts of grease can be collected to make that goal feasible. If the grease receiving station is possible, then the City could reconsider fuel cells and microturbines using methane from the digesters.

#### On-Site Energy Generation

The energy savings incurred by the City of San Diego's Metropolitan Wastewater Department help maintain lower sewer rates for citizens while providing renewable electric energy to the region. Eight "digesters" at the Point Loma Wastewater Treatment Plant use heat and bacteria to break down the organic solids removed from the community's wastewater. One of the by-products of this biological process is methane gas, which is collected from the digesters and piped to the on-site Gas Utilization Facility. The methane powers two continuously running generators that can each produce up to 2.25 megawatts of electricity.<sup>24</sup>

**Community Energy Investments (RE 6.1.1):** The City's Public Financing and Economic Development Authority (PFEDA), through use of EECBG grant funds is providing a long term low interest loan to finance the purchase and installation of a Photo Voltaic (Solar) System for a new multifamily affordable housing construction project.

**Peaker Plants (RE 6.1.11):** Peaker plants powered by fossil fuel-based power sources would emit GHGs to Merced's airshed. Achievements in GHG emission reductions through implementation of the CAP could be degraded by use of such plants, and some form of regulation should be explored. Some peaker plants are powered by renewable resources, however, which should be considered in any such regulation.

**B20 Biodiesel Fuel (RE 6.1.6):** Although the City’s older fire trucks may not be capable of handling the biodiesel, and the City’s fuel vendors don’t yet provide B20 biodiesel fuel, the City’s Fleet Manager states that the use of this alternative fuel is worth pursuing in the future.

### **B20 biodiesel**

From fire engines to snowplows, all 77 of the vehicles in the City of Keene, New Hampshire’s Public Works Department are running smoothly on B20 biodiesel. The fleet is fueled onsite at the department’s pump. The biodiesel performs well in cold temperatures and has improved the air quality inside the fleet maintenance facility.

The City has burned more than 4,400 gallons of biodiesel since 2002, which prevents an estimated 12 tons of CO<sub>2</sub> from entering the atmosphere annually. <sup>24</sup>

## **STRATEGY RE 6.2: RENEWABLE ENERGY DEVELOPMENT REVIEW POLICIES**

(Actions are listed in Appendix E)

## Goal 7. Building Energy Conservation (BE)

### GREEN CITY FACILITIES AND INFRASTRUCTURE

The City has an opportunity to lead by example and to partner with other local leaders, such as UC Merced, in this endeavor.

### ENERGY EFFICIENCY IN NEW DEVELOPMENT

*Merced Vision 2030 General Plan* Policy SD-3.2 encourages new residential, commercial, and industrial development to reduce air quality impacts from area sources and from energy consumption. This can initially be accomplished through incentive programs, through setting an example on public facilities, and required audits.

### COMMERCIAL AND INDUSTRIAL ENERGY PERFORMANCE

The building sector is the major consumer of energy in the U.S., using over one-third of all energy and two-thirds of electricity. Yet, it can be cost-effective to fix up almost any existing building to use dramatically less energy. New buildings can be ten-times more efficient than an ordinary building, existing ones, three-fold more efficient. Many businesses own their own building, but the majority rent space in someone else's building. Programs to reduce the carbon footprint of buildings should address both owner-occupied spaces and rental space, and match upgrade improvements with third-party funding sources and rebates.<sup>54</sup>



## Urban Forestry / Heat Island Effect

Early in the development of Merced, trees were planted to provide shelter from wind and summer heat. The City requires street and parking lot trees to be planted for all new developments. As a result, the City has a large number of mature trees along its streets, in public places and in private yards, and has been designated a “Tree City USA” for over 30 years. The City’s urban forest provides valuable wildlife habitat and creates an attractive atmosphere for residents and visitors alike. Additionally, the City’s trees substantially reduce summer heat and glare around paved areas, thereby helping the City maintain a cooler summer average temperature and reduce energy usage global warming pollution.<sup>24</sup>



## STRATEGY BE 7.1: GREEN CITY FACILITIES AND INFRASTRUCTURE

**STRATEGY:** Facilitate green building construction, renovations, operation, and maintenance at local government owned/operated facilities.

### ACTIONS FOR STRATEGY BE 7.1

- BE 7.1.1:** Complete Phase I of the Energy Retrofit Project of City Facilities and Assets (Siemens Project).
- BE 7.1.2:** For all new City buildings, perform a cost-benefit analysis to determine value in exceeding Title 24 (California Energy Efficiency Standards), and implement where appropriate.
- BE 7.1.3:** Consider use of renewable energy systems on City-owned facilities, providing assessment and options for City Council review and discussion.
- BE 7.1.4:** Consider use of daylight janitorial services.
- BE 7.1.5:** Implement an energy efficient standard procurement policy.
- BE 7.1.6:** Improve energy efficiency when replacing equipment, renovating, or constructing.
- BE 7.1.7:** Lighten colors of City building rooftops and street paving to reduce the “heat island” effect.
- BE 7.1.8:** Recover food waste in cafeterias and kitchens of local government buildings for composting or other use.

### ACTION DESCRIPTION

**Green Facilities Project (BE 7.1.1):** The City, as an organization, is one of Merced’s largest employers and provides a full array of community services. The City maintains a large inventory of assets, including buildings, parks, airport, water wells, wastewater treatment plant, and various pump systems. Recently, the City contracted with a performance-based contractor to audit energy consumption and retrofit City facilities, including building, water and sewer systems, and other assets.

The scope of the Green Facilities project is very broad, and is expected to result in construction/retrofit strategies worth well over \$5 million. Using the performance-based contracting model, the project will be largely self-funded, with energy savings financing the construction and retrofit. The Project will result in energy efficiencies and reduction of greenhouse gas emissions through numerous upgrades:

1. Interior and Exterior Lighting Retrofits
2. Retrofit Approximately 5,644 Street Lighting with Induction Lamps
3. Software Controls Upgrades
4. Retrofit Heating, Ventilation, and Air Conditioning Mechanical Units



5. Retrofit Water Fixtures
6. Install Civic Center Window Film
7. Install Vending Meters
8. Retrofit Airfield Lighting Fixtures
9. Upgrade to Weather-Based Irrigation Controllers

The City's Green Facilities Project, which reduces emissions primarily from electrical sources, is estimated to result in a savings of approximately 3,474,790 kWh/year, or 825.9 tons/year of CO<sup>2</sup> equivalent. This equates to 162 cars removed from the road or 21,177 tree seedlings grown for 10 years. The above calculations do not account for reductions from natural gas, but it makes a minimal impact (~2% of overall lbs CO<sup>2</sup>) according to the contracted energy engineer.

***Energy-Efficiency in New City Facilities (BE 7.1.2):*** This program seeks to raise the energy efficiency bar by constructing new City buildings to exceed Title 24 (California Energy Efficiency Standards), when economically feasible.

## **STRATEGY BE 7.2: ENERGY EFFICIENCY IN NEW DEVELOPMENT**

***STRATEGY:*** Encourage new development to reduce significant GHG emission impacts through energy efficient building designs and siting.

ACTIONS FOR STRATEGY BE 7.2:

- BE 7.2.1:** Implement the minimum CALGreen standards for energy efficiency, contained in 2008 Title 24 standards, effective January 1, 2010.
- BE 7.2.2:** Cooperate with the local building industry, utilities, and the SJVAPCD to promote enhanced energy conservation standards for new construction (General Plan Policy SD-3.2, Implementing Action 3.2.b), and to promote designs which greatly reduce the need for cooling.
- BE 7.2.3:** Update the City's Public Infrastructure Design Standards for new development to include energy-efficient equipment, for example, use of Light Emitting Diodes (LED) traffic lights.
- BE 7.2.4:** **Energy Efficiency Performance Code:** Consider establishment of an incentive-based development code (for example, increased dwelling-unit densities) in exchange for performance-based energy-efficiency measures, which may include the following and other methods:
- Automated control system for heating/air conditioning and energy efficient appliances;
  - Utilize lighting controls and energy efficient lighting in buildings;

- Use light colored roof materials to reflect heat;
- Take advantage of shade (save healthy existing trees when feasible), prevailing winds, landscaping, and sun screens to reduce energy use;
- Install solar panels on carports and over parking areas;
- Increase building energy efficiency percent beyond Title 24 requirements. In addition implement other green building design (i.e., natural day-lighting and on-site renewable, electricity generation); and,
- Require that projects use efficient lighting.

#### ACTION DESCRIPTION

**City Design Standards (BE 7.2.3):** City infrastructure uses electricity, usually related to lighting surfaces on roads, bridges, or bike paths, but also includes water pumps. This action would update the City’s official Standard Designs to require energy efficient equipment, and thereby keep utility costs low for users of such infrastructure.

**Energy Efficiency Performance Code (BE 7.2.4):** This voluntary program would allow increased densities in specified areas of the City in exchange for performance-based energy-efficiency projects allowing the developers, architects, or contractor to decide how to meet the target.

### STRATEGY BE 7.3: RESIDENTIAL ENERGY EFFICIENCY

**STRATEGY:** Encourage retrofitting existing residential buildings and homes to achieve an overall 20% reduction in overall energy use by 2020.

#### ACTIONS FOR STRATEGY BE 7.3:

- BE 7.3.1:** “Energy Independence Program”: Explore use of an assessment district bond financing program to fund installation of renewable energy system and other efficiency upgrades.
- BE 7.3.2:** Provide Public Information on Preventative Maintenance and Energy Conservation (General Plan Policy H-2.1, Implementing Action 2.1.d).
- BE 7.3.3:** Energy Conservation: The City shall assist low-income homeowners and renters in securing energy audits through local utility companies (General Plan Policy H-2.1, Implementing Action 2.1.f).
- BE 7.3.4:** Energy Conservation and Weatherization: Through funding obtained from the Federal Stimulus Program or other funding sources, the City will initiate a program for low/moderate income families to provide weatherization materials such as weather stripping, outlet covers, and water heater insulating blankets (General Plan Policy H-2.1, Implementing Action 2.1.g).
- BE 7.3.5:** Work with the local real estate community to promote the benefit of point-of-sale residential energy efficiency audit and retrofits.

- BE 7.3.6:** Encourage energy efficiency audits for residences during major remodeling.
- BE 7.3.7:** Explore financing vehicle to residential sector for energy retrofits (investigate PACE and other options).
- BE 7.3.8:** Increase residential uptake of utility incentives for energy efficiency. Promote and utilize the statewide framework of Energy Upgrade California to centralize energy efficiency resources and financing for the community.
- BE 7.3.9:** Develop and launch program to incentivize renter-occupied and multi-family residential properties to implement energy efficiency strategies.

#### ACTION DESCRIPTION

***Energy Independence Program (BE 7.3.1):*** Despite rising state and national unemployment in 2009, construction-related jobs in Sonoma County increased 8.4 percent between January and September 2009. The surprising increase was achieved through a local program that allows property owners to finance energy efficiency, water efficiency, and renewable energy improvements through a voluntary assessment attached to the property, paid back through the property tax system over time, otherwise known as *Property Assessed Clean Energy Financing* (PACE).<sup>41</sup> The City of Merced’s Energy Independence Program will likewise seek to create more jobs and lower utility bills for its residents.

***Energy Information Program (BE 7.3.2):*** Utilize Public Service Announcements (PSAs) and other information dissemination programs such as the City’s website and monthly newsletter to educate the public on low-cost preventative maintenance, as well as energy conservation strategies they can take to prolong the life and quality of their home and reduce their long-term utility and maintenance costs. Continue provision and distribution of City’s “Homeowner Preventative Maintenance” brochures and referral to local lender counseling programs.

***Energy Conservation Program (BE 7.3.3):*** Informational flyers will be provided at City offices and other public buildings to advertise funding sources to low-income homeowners and renters for making any necessary changes such as energy conservation fixtures and devices.

***Energy Conservation and Weatherization Program (BE 7.3.4):*** As part of the City’s Energy Conservation and Weatherization Program, staff will arrange needed installation assistance for seniors and/or disabled individuals through local community groups, churches, the senior center, or service organization(s).

## STRATEGY BE 7.4: COMMERCIAL AND INDUSTRIAL ENERGY PERFORMANCE

**STRATEGY:** Retrofit existing commercial and industrial buildings to achieve an overall 20% reduction in overall energy use by 2020.

ACTIONS FOR STRATEGY BE 7.4:

- BE 7.4.1:** Implement a “Green Building” Incentive Program.
- BE 7.4.2:** Implement a “Free Resource and Energy Business Evaluation” Program.
- BE 7.4.3:** Partner with local utility companies to ensure commercial properties maximize use of energy efficiency rebate programs.
- BE 7.4.4:** Establish PACE (AB 811) program and for commercial energy efficiency retrofit projects.
- BE 7.4.5:** Establish revolving loan fund for industrial energy efficiency project financing.
- BE 7.4.6:** Consider amending the Merced Municipal Code to include green building standards for substantially expanded and remodeled buildings.

#### ACTION DESCRIPTION

**“Green Building” Incentive Programs (BE 7.4.1):** Buildings that use little or no non-renewable energy can be comfortable and affordable. Cities can encourage developers to build using energy efficiency standards, even if no regulations are in place. Many incentives to encourage developers to use best practices require little investment for the City. For example, cities can offer priority permit processing for building/developers who propose low-carbon projects, and advertising and recognition for developers who use energy efficient, or renewable energy technologies.

**Free Resource and Energy Business Evaluation (BE 7.4.2):** Following the City of Chula Vista model, adopt an ordinance to encourage and assist local businesses to reduce their energy consumption and utility bills.

#### Free Resource and Energy Business Evaluation

The City of Chula Vista adopted an ordinance to encourage and assist local businesses to reduce their energy consumption and utility bills. The ordinance requires business to participate in an energy and water evaluation of their premises. It helps them identify energy efficiency and water conservation opportunities and take advantage of rebate, incentive, and financial programs for improvements solely at the business’s discretion. For example, the State of California’s, Energy Upgrade California Program (EUC), provides energy and water efficiency and renewable energy retrofits. The evaluations, which are offered at no cost, apply to licensed businesses with a physical storefront and/or office location. Businesses are encouraged, but are not required, to perform efficiency retrofits or improvements identified through the on-site evaluation. In December 2009, 993 businesses received notices about the evaluations during calendar year 2010. By September 1st, 84% had scheduled or completed an on-site evaluation. Two-thirds of evaluated businesses reported that they are likely or very likely to make a change based on the free evaluation, and over 95% would recommend the program to another business.<sup>42</sup>

## STRATEGY BE 7.5: URBAN FORESTRY / HEAT ISLAND EFFECT

**STRATEGY:** Improve and Expand the City's Urban Forest (General Plan Policy OS-1.4).

### ACTIONS FOR STRATEGY BE 7.5:

- BE 7.5.1:** Work with local non-profit agencies, service clubs, and other voluntary organizations to plant trees and shrubs in appropriate areas throughout the City (General Plan Policy OS-1.4, Implementing Action 1.4.c).
- BE 7.5.2:** Consider amendments to City policies and ordinances where appropriate to implement the following actions of the Climate Action Plan:
- Large canopy trees should be carefully selected and located to protect the building(s) from energy consuming environmental conditions, and to shade 50% of paved areas within 15 years. Trees near structures act as insulators from weather thereby decreasing energy requirements. Trees also store carbon.
  - Create guidelines that address the "urban heat island" effect by, e.g. requiring light-colored and reflective roofing materials and paint; light-colored roads and parking lots; shade trees in parking lots and shade trees on the south and west sides of new or renovated buildings.
- BE 7.5.3:** Develop and Implement a Merced Tree Planting Initiative for streets and parks to significantly increase the carbon storage potential of trees and other vegetation in the community. Plant at least 10,000 trees in Merced by 2020.
- BE 7.5.4:** Support the preservation and creation of conservation areas that provide carbon sequestration benefits, such as those with tree cover.
- BE 7.5.5:** Continue to enforce policies and programs that regulate the removal and replacement of trees.

### ACTION DESCRIPTIONS

**Tree Planting Initiative (BE 7.5.3):** In order to rejuvenate some areas of the City that lack tree resources, funding should be sought to pursue a tree planting initiative to plant trees in strategic areas to employ the trees' energy efficiency and air pollution reduction benefits.





## **STRATEGY BE 7.6: BUILDING ENERGY CONSERVATION DEVELOPMENT REVIEW POLICIES**

(Actions are listed in Appendix E)



## Value: Leaders and Partners

### Goal 8

**The Public Outreach goal facilitates achievement of all targets and is not accounted separately.**

## Goal 8: Public Outreach and Involvement (PO)

### Community Resource

In addition to implementing programs to reduce its own carbon emissions, local government has an important role to play in bringing others to the table and helping them to reduce their GHG emissions. Local governments can develop public education and outreach programs, can establish public-private partnerships and programs to publicly recognize achievements, and offer incentives for actions that reduce GHG emissions.

Education and outreach programs would include events such as conferences, workshops, fairs, featured speakers, public service announcements, print messages, and online information or interactive sites. Ideally, topics will span a broad range, including the fundamentals of climate change and how our actions contribute to it, down to specific actions or projects, such as a “lights out” campaign, a “green tip of the day” or a how-to workshop on gardening with drought-tolerant, native plants.

### Support a Green Economy

Local governments are in a unique position to work with local businesses on climate protection projects and partnerships. Many of the GHG reduction strategies that rely on improved efficiency in energy, water, fuel use, or waste reduction, can generate significant cost savings for businesses over a fairly short time frame. A local government that has implemented some of these strategies in its own municipal operations is in a good position to demonstrate savings, but even if the government does have data of its own to share, it can encourage business participation in these types of programs.

Suggestions include supporting the local chamber of commerce, business associations, or business-focused civic groups to establish a forum to share efforts and results, such as newsletters or a monthly breakfast meeting or luncheon. Local government can also help establish demonstration projects, and can publicly recognize local leaders with awards or in public service messages. Incentives are another important tool to encourage actions that reduce GHG emissions in the near term. For example, public recognition can be a powerful motivator as can express permitting of projects on a “green project” list.<sup>16</sup>

## STRATEGY PO 8.1: COMMUNITY RESOURCE

### STRATEGY: Engage Community Groups and Resources in Sustainability Programs

#### ACTIONS FOR STRATEGY PO 8.1:

- PO 8.1.1:** Work with the local energy providers on voluntary incentive-based programs to encourage the use of energy efficient designs and equipment (General Plan Policy SD-3.2, Implementing Action 3.2.a). Form a local government partnership with local energy utilities to promote community-wide energy efficiency, similar to the VIEW Partnership that operates in Tulare County.
- PO 8.1.2:** Continue to coordinate implementation and planning of the Merced Bicycle Master Plan with the County of Merced and the University of California (General Plan Policy T-2.6, Implementing Action 2.6.a).
- PO 8.1.3:** Participate in resource and material recovery studies. Support Merced County Regional Waste Management Authority efforts to study the region's waste stream and develop recovery methodologies that will facilitate and promote enhanced recycling efforts and further reduce the volume of waste material deposited in landfill sites (General Plan Policy T-6.1, Implementing Action 6.1.c).
- PO 8.1.4:** Design and Implement an Energy Program Website for the City of Merced.
- PO 8.1.5:** Modeled after the "DoRight Leadership Corps", work with local education-based community partners to establish a youth program and a sustainability education curriculum that mobilizes youth action to create a sustainable future through education, business partnerships, legislative action, and public relations.
- PO 8.1.6:** Work with Merced County Community Action Agency to promote building insulation and weatherization.
- PO 8.1.7:** Launch a community-based "Cool Roofs and Pavement" campaign for private and public buildings and sites.
- PO 8.1.8:** Continue to support and facilitate implementation of the San Joaquin Valley Blueprint.

#### ACTION DESCRIPTIONS

***DoRight Leadership Corps Sustainability Assessment (PO 8.1.5):*** The "DoRight Leadership Corps" was created in 2005 by educator Scott Beall. Working with middle and high school age youth, the DLC is both a youth program and a sustainability education curriculum that mobilizes youth action to create a sustainable future through education, business partnerships, legislative action, and public relations. One aspect of the DLC program is DoRight Enterprises – a youth run consulting firm that can conduct sustainability and energy efficiency audits. The City of Merced, in coordination with UC Merced and local school districts will pursue the formation of a local "DoRight Leadership Corps." <sup>47</sup>



**Cool Roofs (PO 8.1.7):** - In warm climates, cool roofs can absorb less solar energy and quickly release any heat that they store. Simply replacing black or metal roofs with a lighter colored surface can reduce the need for air conditioning and produce huge annual cost and energy savings while decreasing global warming pollution at the same time.<sup>24</sup>

## STRATEGY PO 8.2: SUPPORT A GREEN ECONOMY

**STRATEGY:** Encourage and support GHG Reductions in the Business Community

ACTIONS FOR STRATEGY PO 8.2:

**PO 8.2.1:** Work with local chamber of commerce offices to create a Green Business Challenge.

**PO 8.2.2:** Where appropriate, continue to encourage the efforts of the Greater Merced Chamber of Commerce REACON team.

**PO 8.2.3:** Seek to establish partnerships with area employers to work together to help meet the communitywide sustainability and related emission goals.

**PO 8.2.4:** Seek to implement a Green Business Program. Encourage local businesses and industries to benefit from local utilities energy-efficiency programs.

### ACTION DESCRIPTION

**Green Business Challenge (PO 8.2.1):** The Challenge is a friendly competition to engage commercial property managers, office tenants, and others in the business sector to seek energy-related cost savings and energy efficiency, conserve water, reduce waste, and involve their employees in improving the environmental performance of their buildings and operations.<sup>23</sup>

**REACON Team (PO 8.2.2):** The Greater Merced Chamber of Commerce recently created a REACON (Recycling, Energy, Air, Conservation) Team, modeled after the original REACON Team of the Greater Stockton Chamber of Commerce. The REACON Team (Recycling, Energy, Air Conservation) is a collaboration between the Greater Merced Chamber, private businesses, municipal and public agencies, economic development professionals, and the communities of Merced County. The REACON Team offers a free business-to-business service, which is an overall assessment of how a chamber member can implement cost-saving strategies on disposal services, energy usage, indoor air quality, and other services.





**Climate Partnerships (PO 8.2.3)** are voluntary pacts among employers to take action to reduce their own emissions, and to work together to help meet the communitywide goal. Employers commit to take actions that will reduce their global warming pollution emissions while at the same time cutting costs, improving the work environment for their employees, and improving their record of corporate responsibility.

**Green Business Programs (PO 8.2.4)** are partnerships of environmental agencies, utilities, and nonprofit organizations that assist, recognize, and promote businesses and government agencies that volunteer to operate in a more environmentally responsible way. To be certified "green," participants must be in compliance with all regulations and meet program standards for conserving resources, preventing pollution, and minimizing waste. The "Monterey Bay Area Green Business Program," is a local model that Merced may wish to utilize.

## **STRATEGY PO 8.3: SUPPORT SUSTAINABLE NEIGHBORHOODS**

**STRATEGY:** Garner the efforts of local neighborhood groups to initiate energy efficiency actions.

### **ACTIONS FOR STRATEGY PO 8.3**

- PO 8.3.1:**      **LEED Neighborhood Planning:** Consider various options for establishing a neighborhood planning process by which the concerns of specific neighborhoods can be addressed through neighborhood plans (General Plan Policy L-1.8, Implementing Action 1.8.c).
- PO 8.3.2:**      Create a Community-Climate Action Challenge Program or Campaign.
- PO 8.3.3:**      Development of the Sustainable Community Strategy (SCS) by the *Merced County Association of Governments* provides an opportunity for community collaboration and planning as to how to reach the state-imposed target of reaching a 5% per capita reduction of GHG emissions through reduction of vehicle miles travelled by 2020. This effort is significant because communities that do not meet the state threshold may experience loss of transportation funding.
- PO 8.3.4:**      **Revitalized Urban Villages:** Seek opportunities, such as the Martin Luther King Jr. Way Revitalization Plan Project, to use the urban village to rejuvenate existing neighborhoods.

## ACTION DESCRIPTION

**LEED Neighborhood Planning (PO 8.3.1):** When staffing levels allow, the City's long-standing desire to establish a neighborhood planning program, should strive for a high-level of public participation at the neighborhood level, and should be founded on discussions of LEED Neighborhood Planning concepts in order to focus the discussion and results toward sustainable planning, including energy efficiency.



**Community-Climate Action Challenge Programs or Campaigns (PO 8.3.2)** are voluntary and aim to raise public awareness about climate change and to encourage households and businesses to reduce their emissions pollution. The process is about taking small steps to reduce energy use, at home and on the road, to help create sustainable communities. For example, the City of Burlingame's "Community 10 percent Challenge Program" is achieving an estimated annual reduction of 1,500 tons of CO<sub>2</sub> in the residential sector alone.<sup>24</sup> Another example is the *One Day Campaign* in Vancouver, British Columbia, which has established partnerships with youth, community groups, and business leaders.<sup>24</sup>

**Sustainable Community Strategy (PO 8.3.3):** As it applies to SB 375, the California Air Resources Board adopted "placeholder" GHG emission reduction targets of 5% from 1990 levels by 2020 and a 10% reduction by 2035 for the San Joaquin Valley, and that this amount of emissions would primarily come from reducing vehicle miles traveled. NOTE: These targets may change in Fall 2012. During the Plan project period (2012-2020), the Merced County Association of Governments, with input from the City of Merced, will prepare a *Sustainable Community Strategy* (SCS) as part of the update to the Merced County Regional Transportation Plan (RTP). The SCS will define in greater detail how trips will be reduced countywide.

### Public Outreach

**“Greening Greenfield,” a citizen group working with the town of Greenfield, MA reached its goal of signing more than 900 households up for its 10% Challenge Campaign, which asks residents to commit to making small changes to save energy and money in their homes, businesses, and transportation choices. As a result, average household energy use in Greenfield has decreased from 3.1 percent to 12.8 percent over the past four years, depending on the type of fuel used. <sup>23</sup>**

***Revitalized Urban Villages (PO 8.3.4):*** Urban Village development policies and principles can result in improved neighborhood environments, reduced traffic congestion, and better and more cost effective service delivery systems. Although some existing neighborhoods in Merced contain certain elements of the Urban Village, some service and infrastructure improvements could enhance these “Villages.” Through the use of the Specific Plans, existing neighborhoods could be revitalized utilizing modified Urban Village policies, programs, and standards.





# PART 5: Implementation

Steps to Reach Plan Goals

## PART 5: IMPLEMENTATION

The extent of the success of Merced’s Climate Action Plan is directly linked to the degree of implementation. PART 5 describes four broad issues related to Climate Action Plan implementation, and includes:

- Locally Driven Plan
- Next Steps
- Phasing Plan and Monitoring, Evaluations, and Updates
- Barriers to Implementation
- Implementation Factors

*“Although the amount of greenhouse gas emissions from City of Merced facilities and operations is relatively low, compared with those generated by the community as a whole, the capacity of local government to affect change in Merced’s overall emissions is high. For this reason, the City of Merced should be a leader to foster a sustainable community.”*

-Kahri Boykin, member of the City of Merced Climate Action Plan Advisory Ad-Hoc Committee.



## **Locally Driven Plan**

### **Reason for the Plan**

In November 2009, the City Council accepted Energy Efficiency and Conservation Block Grant funds from the Federal Department of Energy to undertake several projects to increase energy efficiency. At that time, the Assistant City Manager identified the document to be completed by the Planning Division as a “roadmap” that included all current “green” activities and policies of the City, along with recommendations to expand these as appropriate. At the same time, Merced and other local California cities and counties navigated their draft general plan update efforts through the emerging setting of greenhouse gas emission analysis requirements. The efforts of many jurisdictions were challenged, resulting in negative consequences. For example, the City of Stockton agreed to limit development activity until they had completed a Climate Action Plan (CAP), the content of which was strongly influenced by outside entities. To strengthen the City of Merced’s effort’s, the “roadmap” document was titled a Climate Action Plan (CAP).

On September 7, 2010, the City Council took two key Climate Action Planning steps: (1) adopted City Council Resolution #2010-80 committing to take steps to reduce greenhouse gas emissions through adoption of a Climate Action Plan (CAP); and, (2) directed Staff to begin the recruitment process for members of a Climate Action Plan (CAP) Ad-Hoc Advisory Committee. The Committee met monthly from January through September 2011.

### **Self-Governance**

The origin, development, and implementation of the Merced Climate Action Plan was grounded on the belief in local self-governance for the betterment of the community of Merced. While the City recognizes that some of the recommended actions reflect state mandates, many of the recommended actions are locally driven and benefit locals. Decisions of how to implement these actions are likewise locally driven, and the basis for such effort is based on a broad set of community values and goals established prior to the issue of global warming.

### **Local Leadership**

The Merced Community consists of an array of interested citizens and groups each containing the ability and energy to implement in whole, or as partners with others, many of the ideas and actions expressed in the Climate Action Plan. Such independent and community-based spirit is celebrated and encouraged.

## **Implementation Decision Tree**

The Climate Action Plan is primarily a collection of existing and proposed City policy statements that foremost improve the community and secondarily reduce greenhouse gas emissions. As a set of policy statements, implementation of the recommended actions necessitates further community involvement involving citizens, elected and appointed officials. Adoption of the CAP does not automatically deploy actions for implementation.

This section of the CAP describes the process City Department heads and managers will use when taking steps to initiate implementation of the actions recommended in this plan, and are based on the following statements which appear throughout this document including, but not limited to:

- The CAP is not binding on the Council or the Community.
- Strategies will be implemented in an incremental manner, based on the needs and ability of the Community.
- Strategies will be financially feasible.
- Pursue actions, not simply based on its GHG reduction potential, but on the suite of benefits that it can provide the community.
- Actions will be developed by CAP leadership and presented for the City Council's consideration prior to actual implementation.
- The City Council and public will be afforded an opportunity to review recommended actions and related costs and benefits, prior to implementation of any action.
- Prepare a detailed cost-benefit analysis of recommended strategies and actions, recognizing at least these values: (a) economic development; (b) GHG reduction potential; and, (c) co-benefits.
- Pursuing low or no-cost high-priority recommendations will have the greatest likelihood of success.
- After the CAP is adopted, specific actions will be developed by CAP leadership and presented for Council's consideration prior to actual implementation.

### ***Implementation Decision Tree***

Implementation of all recommended action items can only proceed after: 1) an assessment of its costs and benefits by staff, unless waived by the City Manager; and, 2) review of the detailed program to implement said action by the City of Merced City Council at a public hearing.

### ***Independent Community Efforts***

Many CAP recommended actions could occur independently of City involvement, and are not subject to the decision-tree described above.

## **Statement of Intent**

On August 28, 2012, the Economic Development Advisory Committee unanimously recommended approval for the adoption of the proposed Climate Action Plan (CAP). During the discussion period, however, several EDAC members expressed concern that the CAP appears to create the potential for future City imposed requirements and fees. It was suggested that a statement be prepared that describes the intent of the City in pursuing the proposed CAP and addresses the expressed concern.

In response, staff noted that the intent of the CAP was to promote the following:

- compliance with federal and state greenhouse gas emission laws
- voluntary actions reflecting community values
- gaining a competitive advantage to secure grant funding
- the use of incentives to encourage positive change

Furthermore, the CAP will not require new or expanded fees or regulations except where consistent with State law or local ordinance.

City Staff emphasized that the CAP includes checks-and-balances, including a section that requires all actions encouraged or required in accordance with the CAP be subject to public review and a cost benefit analysis.

On October 1, 2012, the City Council of the City of Merced affirmed this statement, and contributed the first bullet-point above.

# Next Steps

## GHG Reduction Tools

The Climate Action Plan includes the following tools to reach the City's GHG reduction target 1990 levels by 2020:

- A locally-supported comprehensive list of strategies and implementation actions;
- An Implementation Phasing Plan;
- A list of Implementation "Initial Steps" and "Guiding Principles";
- A list of Potential Community Partners; and,
- List of Implementation Factors.

The CAP includes 31 strategies and 156 implementation actions, and describes numerous City departments and community partners. In order to reach the selected GHG reduction target, a comprehensive approach, both in terms of actions and implementers, will be required.

## Initial Steps and Guiding Compass

The Merced CAP is an important benchmark step toward achieving a sustainable community, and provides tools and direction for implementation. Further steps are needed to integrate the CAP into the operating fabric of the City and Community, however. The Climate Action Plan Advisory Ad-Hoc Committee, made up of citizens, business owners, development interests, community advocacy groups, chamber of commerce groups, utilities, and public agencies, recommends that the City Council take appropriate actions to achieve these initial steps, which are outlined below, and should primarily occur during the "near-term" phase of the implementation.

In addition to these initial steps, the Merced Climate Action Plan comes with a *Guiding Compass*, which is a set of strategies that charts a general course of direction and approach to implement the CAP. The strategies are not an exhaustive list of prescriptions for what could or should be done. The strategies listed below are based on the premise that the greatest potential to reduce greenhouse gas emissions is from a coalition of independent individuals and groups, banded together under a common goal. The strength of each entity is based on knowledge and understanding of the issues, ability to act independently, and encouragement to discover new approaches.



## Leadership

### INITIAL STEPS

- The City Council to examine and select an appropriate leadership model for Plan Implementation.

### GUIDING COMPASS

- Identify the highest priority problems for the City and the most cost-effective solutions.
- Foster communication among City Departments, City Officials, and citizens.
- Update actions to address new challenges and opportunities.
- Expand Leadership Capacities in Local Government and the Community.





## Programs and Budgets

### INITIAL STEPS

- The City Council will select a leadership model to create a detailed Implementation Plan.
- Integrate CAP Measures into Department Work Plans, as appropriate.
- Identify sets of measures that when implemented together, provide value-added GHG reductions.

### GUIDING COMPASS

- Utilize the CAP as a resource of identifying potential Capital Improvement Projects.
- Establish knowledge among City Staff and Community Partners of funding opportunities for use with specific measures.
- Maintain and Strengthen Existing Local Sustainability Programs.
- Expand programs on foundations set during initial plan phases.
- Position City to capture future funding opportunities.
- Pursue a Coordinated Funding Strategy with Community Partners.
- Identify and pursue local, regional, state, and federal grants as appropriate to support implementation.

## Partnerships



### INITIAL STEPS

- Coordinate to avoid redundancy and to leverage resources.

### GUIDING COMPASS

- Recognize and support the actions of independent entities.
- Form new partnerships; enhance existing relationships.
- Increase technical support and data sharing capacity.
- Motivate partners and Mercedians by use of incentives and recognition programs, applicable to the varied interests and needs of the community. For example, use of energy-saving appliances in new homes as a marketing tool to home-buyers.
- Work with partnerships that implement the Climate Action Plan.

## Assessment, Monitoring, Evaluations, and Updates



### INITIAL STEPS

- Prepare a detailed cost-benefit analysis of recommended strategies and actions, recognizing at least these values: (a) economic development; (b) GHG reduction potential; and, (c) co-benefits.

### GUIDING COMPASS

- Monitor key indicators to identify any increases in building energy efficiency and conservation advancements in waste reduction and improvements to the vehicle fleet, etc. This will not only help the City track its progress towards reaching its emission reduction targets, but also to critique the success of any projects or policies that may be implemented to reduce emissions.
- The City should regularly re-inventory its emissions. The process of conducting a re-inventory will allow demonstration of progress toward local emissions reduction targets and identify opportunities to integrate new or improved measures into your emissions reduction plan.
- Review and update the CAP as appropriate.
- Provide regular Climate Action Plan progress reports to the City Council and City Manager. These progress reports can be posted on the City website to inform the community on progress.
- Realize incremental change.
- Amend City policies and ordinances, as appropriate, to implement the CAP goals, policies, and actions.

# Phasing Plan and Monitoring, Evaluations, and Updates

## Phasing Plan

Adoption of the City of Merced Climate Action Plan is a starting point in reducing greenhouse gas emissions to 1990 levels by 2020. For purposes of this CAP, 2020 is regarded as the Plan's end-point, leaving just 8-years after adoption of the Plan to reach the City's GHG reduction target. In general, the Climate Action Plan Ad-Hoc Advisory Committee recommends that the City first follow the path of least resistance in deploying actions, i.e. those actions that have the least financial and regulatory barriers to implementation. To help ensure continued momentum of Merced's efforts, the Climate Action Plan Ad-Hoc Advisory Committee also recommends the use of interim targets to facilitate additional support and accountability. This results in a 3-phase plan, and is consistent with the Merced City Council's direction to recognize short-term and near term approaches to meet the City's 2020 long-term goal. This 3-phase plan also provides a framework in which to set implementation strategies that can be achieved in an incremental manner, based on the needs and ability of the Community and City Staff.



## Phasing Plan Considerations

The following considerations are provided to aid in the preparation of a complete implementation schedule, which will describe the “what,” “when,” and “whom” aspects for all listed strategies and actions of the CAP. The outcome of such task is largely dependent upon the form of leadership and available City resources to implement the CAP.

- It is important to note that this phased approach is conceptual in nature and subject to adjustment based on implementation successes and challenges, as well as what leadership model is deployed.
- Use of higher order leadership models can result in greater productivity and implementation of actions in earlier phases.
- Although each phase includes a kick-off year and describes a focus period, near-term and mid-term measures will likely extend into subsequent phases.



## PHASE 1: NEAR-TERM

Phase 1, generally occurring from 2012 to 2014, should consist of strategies and actions that:

- have already begun to be implemented;
- are required by state law;
- are enhancements of existing City or Community programs;
- lay public outreach groundwork for more complicated projects to be implemented in the later phases;
- includes several voluntary compliance measures for the Community; and,
- form relationships with community groups engaged in sustainability.



## PHASE 2: MID-TERM

Phase 2, generally occurring from 2015 to 2016, should consist of strategies and actions that:

- implement new state-based mandatory programs which capitalize on the educational and voluntary compliance measures of Phase 1 programs; and,
- implement measures that provide significant emission reductions with low-to-moderate costs.



## PHASE 3: LONG-TERM

Phase 3, generally occurring from 2017 to 2020, should consist of strategies and actions that:

- could not be implemented earlier due to obstacles of available data, technology, or resources;
- require substantial engagement of the community; and,
- require future technologies and significant monetary resources.



## Incorporating into Existing Planning Mechanisms

This plan builds upon the momentum developed through previous and related planning efforts and recommends implementing projects, where possible, through the following mechanisms:

- *Merced Vision 2030 General Plan*
- City Ordinances
- Urban Water Management Plan
- Capital Improvement Plans and budgets
- City of Merced Bicycle Plan
- Building and Safety Codes
- Official Standard Engineering Designs
- Other plans, regulations, and practices with a mitigation focus

Efforts should be made to monitor the progress of Climate Action Plan recommended actions implemented through these other planning mechanisms and where appropriate, priority projects should be incorporated into updates of this Plan.



## Monitoring, Evaluation, and Updates to the Plan

### MONITORING THE PLAN

Upon adoption, the Climate Action Plan faces the truest test of its worth: implementation. Implementation implies two concepts—action and priority, which are closely related. While this plan puts forth many worthwhile and high priority recommendations, the decision about which action to undertake first will be the first task facing the City. Two factors will help in making that decision. First, there are high-priority items, and second, funding is always an issue. Thus, pursuing low or no-cost high-priority recommendations will have the greatest likelihood of success.

**Implementation is most successful when actions are incorporated into the day-to-day functions and priorities of the government and development community.**

Simultaneous to these efforts, it is important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the more costly recommended actions. This will include creating and maintaining a bank of ideas on how any required local match or participation requirement can be met. When funding does become available, the Climate Action Plan will be in a position to capitalize on the opportunity.

### EVALUATING THE PLAN

Evaluating progress is an ongoing process, and as such, the Climate Action Plan should be treated as a living document that must grow and adapt in order to keep pace with changes. Data to measure success and challenges will be collected continuously during the implementation period. A full report and assessment will be crafted prior to the beginning of Phase 2 and 3 to describe the effectiveness of recommended actions, and to reflect necessary changes or adjustments. The evaluation process includes a firm schedule and timeline, and identifies the local agencies and organizations participating in plan evaluation.

City Staff members will be responsible for monitoring and evaluating the progress of the emission reduction strategies in the Plan. City Staff will review the goals, strategies, and action items to determine their relevance to changing situations in the City, as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. City Staff will also review the *Context of Climate Action Planning* and *Capacity Assessment* portions of the Plan to determine if this information should be modified, given any new available data. Partnership organizations responsible for various actions will be encouraged to report on the status of their projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised.

Evaluation of progress can be achieved by monitoring changes related to a series of GHG emission metrics. In order to best evaluate reduction of GHG emissions as a result of plan implementation, the TAC will follow the following process:

- A representative from the responsible entity identified in each action will be responsible for tracking and reporting project status and provide input on whether the project as implemented meets the defined goal and is likely to be successful in reducing emissions.
- Projects that have failed or are not considered feasible may be adjusted and/or noted after a review of their consistency with established criteria, time frame, community priorities, and/or funding resources.

## UPDATING THE PLAN

In 2020, the City Manager, subject to available funding and Council priorities, will cause the preparation of a comprehensive update to the Climate Action Plan. Appropriate changes to the Plan will be made before submitting it to the full TAC and presenting it to the City Manager prior to approval by the City Council. The TAC will also notify all holders of the City's Plan when changes have been made. In keeping with the process of adopting the plan, a public involvement process to receive public comment on plan updating will be held during the review period, and the final product will be adopted by the City Council.

## CONTINUED PUBLIC INVOLVEMENT

Continued public involvement is imperative to the overall success of the plan's implementation. The update process provides an opportunity to seek additional public comment. A public meeting(s) to receive public comment on plan evaluations and updates will be held during these processes. CAP implementation leadership will coordinate with all stakeholders participating in the planning process.

The plan update process will include continued public and stakeholder involvement and input through attendance at meetings, web postings, and press releases to local media. The public will also have the opportunity to provide feedback about the Plan. Copies of the Plan will be catalogued and kept at all of the appropriate agencies in the City. The existence and location of these copies will be publicized in the City newsletter which reaches every utility customer in the City.

Copies of the Plan and any proposed changes will be posted on the City's website. This site will also contain an email address and phone number to which people can direct their comments and concerns.

**After the CAP is adopted, specific actions will be developed by CAP leadership and presented for Council's consideration prior to actual implementation.**

# Barriers to Implementation

## Introduction

While the City of Merced CAP includes many tools to reduce GHG emissions, there are barriers to implementation that must be recognized. The Climate Action Plan includes a comprehensive list of strategies and associated actions to reduce GHG from new development and from existing emission sources, but the ability to implement these is dependent upon the leadership and available staff resources. The Climate Action Plan (CAP) Ad-Hoc Advisory Committee recommends that as a first step, the City Council consider all options and take action to assess and implement the highest-order Leadership Model possible, soon after adoption of the CAP.

## Relationship of Leadership and Implementation Schedule

The current leadership model consists of “Focused Programs,” in which an assigned part or full time employee implements a single program, for example, water conservation or recycling. This is a good first step toward establishing the more robust sustainability program, which is needed to reach the GHG reduction target. Existing programs in Merced include:

- Water Conservation Specialist, City of Merced, Public Works Department
- Recycling Information Specialist, Merced County Association of Governments (MCAG)
- Commute Connection Website, MCAG Contracted Service
- Community Energy Manager, PG&E

Absent the hiring of additional staff members, work on sustainability and climate-related tasks by existing City Staff would need to be balanced with other duties and priorities.

The current Leadership Model will be able to implement a select group of actions; a change in the current leadership model is necessary to enable the City to reach the full GHG reduction target of 20% below 1990 by the year 2020.

## Funding

The capacity of City Staff resources has been dramatically reduced due to budget cuts, associated layoffs and retention of existing services. Although Climate Action Planning is a high funding priority for federal and state departments, these project-based revenue sources are not guaranteed. Local funding sources are limited.

In March 2011, ICLEI asked its members to submit their approaches to funding sustainability staff and operations, and compiled responses from 38 local governments across the county. Its findings found that local government employ a mix of strategies, though many relied exclusively on their General Fund.

- 55% funding staff and operations through their General Fund (fully or partially)
- 37% through special fees or rebates, such as solid waste fees
- 24% through foundation grants or partnerships
- 29% through the federal Energy Efficiency and Conservation Block Grant or their stimulus related funding
- 16% through cost savings

In recent years, City of Merced General Fund resources have been reduced. Intertwined with the City Council's decision on leadership is the related issue of funding.





# Implementation Factors

## Near Term Implementation Focus

The current leadership model will be able to implement some, but not all strategies and actions generally described in Phase 1 of the CAP, and include those that:

- have already begun to be implemented, such as recycling, water conservation, and bike planning;
- are required by state law, for example, commercial recycling and enforcement of CALGreen; and,
- are enhancements of existing City or Community programs, as resources allow.

## New Development Projects

The City's Development Services Department will apply project mitigation measures and conditions of approval to new development projects to reduce GHG emissions. Appendix E provides a list of project-level actions applicable to new development.

## Implementation Factors

For each recommended strategy and actions, the CAP lists several factors to aid in the drafting of an implementation plan. These are described in Appendix B.

### *Existing, Enhanced, and New Actions*

CAP *actions* are comprised of existing or enhanced policies and programs as well as new ideas based on best practices from around the country.

### *Government Operations / Community*

Government Operations are specific to the internal operations of the City of Merced. They apply to buildings the City of Merced owns or leases, vehicles used to provide services such as police and fire, lighting of roadways, etc. Conversely, Community Activities require involvement and participation from citizens and/or private property.

### *Greenhouse Gas Reduction Potential*

Various specific actions will result in different GHG emission reductions. For example <sup>53</sup>:

Action	CO2e reduction (metric tons)
Replace 5 mid-sized fleet vehicles with hybrids	5
Replaced 1,000 fluorescent lights with Super T8 lamps with electric ballast	28
Increase energy efficient of a 30,000 sq. ft. building by 25%	51

The GHG reduction potential amounts in this Plan should be regarded as general estimates and subject to revision.

### ***Assessment of Costs and Benefits***

Preparation of a cost-benefit analysis with the Climate Action Plan would have been cost-prohibitive and premature. The cost to hire a specialist knowledgeable in GHG reduction potentials for all energy sources (buildings, vehicles, waster, water, land use, etc.) and performed for all proposed action items would have taken a large portion of the grant funds. Additionally, due to changes in costs or project approach, the cost-benefit analysis would have been out-of-date when actions would be implemented. Rather, the focus of the planning effort was to identify several potential greenhouse gas reduction actions, and then conduct a cost-benefit analysis at a time when its implementation approach and costs are more certain, and when additional community involvement could occur in deciding the actual approach of the action.

### ***Responsible City Departments/Divisions***

Even with a Sustainability Manager, the primary responsibility to implement various GHG reduction activities lay with an array of different City Departments, and include the following:

- Planning (PLNG)
- Inspection Services (I.S.)
- Public Works (PW)
- Housing (H)
- Economic Development (ED)



## APPENDIX A

### Glossary / Acronyms

**Adaptation** — Adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation.

**Anthropogenic** — Made by people or resulting from human activities. Usually used in the context of emissions that are produced as a result of human activities.

**Base Year** — An emissions analysis year for which comprehensive and reliable data can be obtained. It is better to select a more recent base year for which a lot of information can be obtained easily than to spend weeks trying to track down data that may not exist or be incomplete.

**California Air Resources Board (CARB)** — The CARB is the state agency tasked with implementing AB 32, The California Global Warming Solutions Act of 2006, and achieving the mandated emission reduction goals.

**California Climate Action Registry (CCAR)** — A private nonprofit organization originally formed by the State of California. The California Registry serves as a voluntary greenhouse gas (GHG) registry to protect and promote early actions to reduce emissions by organizations. The California Registry provides leadership on climate change by developing and promoting credible, accurate and consistent GHG reporting standards and tools for organizations to measure, monitor, third-party verify and reduce their emissions consistently across industry sectors and geographical borders.

**Carbon Dioxide** — Carbon dioxide, abbreviated CO<sub>2</sub>, is essential to living systems and released by animal respiration, decay of organic matter and fossil fuel burning. It is removed from the atmosphere by photosynthesis in green plants.

**Climate Action Reserve** — A national offsets program working to ensure integrity, transparency, and financial value in the U.S. carbon market.

**Climate Change** — Climate change refers to any significant change in measures of climate (such as temperature, precipitation or wind) lasting for an extended period (decades or longer).

**Criteria Air Pollutants (CAPs)** — The term criteria air pollutants refers to pollutants that are regulated under the U.S. Clean Air Act. As with carbon dioxide, the major sources of these pollutants are fossil fuels. Most measures that reduce carbon dioxide emissions also reduce criteria air pollutants. Criteria air pollutants include nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), carbon monoxide (CO), sulfur oxides (SO<sub>x</sub>), and particulate matter smaller than ten microns in diameter (PM-10).

**Emissions Factor** — A unique value for scaling emissions to activity data in terms of a standard rate of emissions per unit of activity (e.g., grams of carbon dioxide emitted per barrel of fossil fuel consumed).

**Equivalent Carbon Dioxide (CO<sub>2</sub>e)** — Equivalent carbon dioxide, abbreviated as CO<sub>2</sub>e and also known as global warming potential (GWP), is a unit that allows emissions of greenhouse gases of different strengths to be added together and framed in terms of comparative units. For carbon dioxide itself, emissions in tons of CO<sub>2</sub> and tons of CO<sub>2</sub>e are identical, whereas for methane, an example of a stronger

greenhouse gas, 1 ton of methane emissions has the same GWP as 21 tons of CO<sub>2</sub>. Thus 1 ton of methane emissions can be expressed as 21 tons of CO<sub>2</sub>e.

**Global Warming** — Global warming describes the recent trend of increasing average global surface and tropospheric (referring to the lowest part of the atmosphere where “weather” phenomena occur) temperatures. The greenhouse gases (CO<sub>2</sub>, methane, nitrous oxides, and CFCs) are emitted into the atmosphere and increase the atmosphere’s “entrapment” of heat.

**Global Warming Potential (GWP)** — Global warming potential is a concept developed by the Intergovernmental Panel on Climate Change that provides a comparative measure of the impacts of different greenhouse gases on global warming, with the effect of carbon dioxide being equal to 1.

**Greenhouse Gases and the Greenhouse Effect** — The Earth’s climate is determined by a delicate balance between the solar energy that arrives from space and the heat energy that the Earth creates from the sun’s rays. The energy that arrives from space should always equal the energy that the Earth emits back to space. When something disturbs this balance, our climate adjusts by cooling or warming the Earth to return things to normal. A portion of outgoing heat energy is absorbed in the atmosphere by greenhouse gases such as water vapor, carbon dioxide, methane, and nitrous oxide. If these trace gases were not present, the average temperature on the Earth’s surface would be -32 degrees Fahrenheit, and life as we know it would not have evolved here. But the natural greenhouse effect keeps the average global surface temperature at a comfortable 59 degrees Fahrenheit.

**IPCC—Intergovernmental Panel on Climate Change** —The Intergovernmental Panel on Climate Change (IPCC) was jointly established in 1988 by the World Meteorological Organization and the United Nations Environment Programme to: 1) assess available scientific information on climate change; 2) assess the environmental and socioeconomic impacts of climate change; and, 3) formulate response strategies.

**Kyoto Protocol** —The Kyoto protocol was adopted by consensus at the third session of the Conference of the Parties (COP-3) in December 1997 in Kyoto, Japan. When ratified by a certain percentage of participating countries, it contains legally binding emissions targets for developed countries in the post-2000 period.

**Methane** — Methane, abbreviated CH<sub>4</sub>, accounted for about 8.6% of U.S. emissions in 2005. Methane is produced by anaerobic decomposition of solid waste in landfills and sewage treatment facilities, wetlands and rice paddies, as a by-product of fossil fuel energy production and transport and also from outgassing in livestock. It is also the principle constituent of natural gas and can leak from natural gas production and distribution systems and is emitted in the process of coal production.

**Ozone** — An ozone molecule consists of three atoms of oxygen. Ozone is much more reactive than oxygen and is toxic to human beings and living matter. At ground level it forms smog and causes damage to forests and humans. (In the stratosphere, it functions mainly as a filter for ultraviolet radiation and to a lesser extent as a greenhouse gas.)

**ROI** — Return on Investment: A performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. To calculate ROI, the benefit (return) of an investment is divided by the cost of the investment; the result is expressed as a percentage or a ratio.

**AB811** Municipal property tax based financing. Formal name of Legislation is: Contractual Assessments: energy efficiency improvements

**AB32** Assembly Bill 32, California's Global Warming Solutions Act of 2006

**ABAG** Association for Bay Area Governments

**AG** Attorney General

**AIA** American Institute of Architects

**APY** Acre-Feet per Year

**ARRA** American Recovery and Reinvestment Act

**Build It Green (BIG)** Non-profit organization, established GreenPoint Rated system

**CBSC** California Building Standards Commission

**CALGreen** California's first-in-the-nation Green Building Standards Code

**CAP** Climate Action Plan

**CARB** California Air Resources Board

**CEC** California Energy Commission

**CEQA** California Environmental Quality Act

**CGBSC** California Green Building Standards Code

**CIP** Capital Improvement Program

**CPUC** California Public Utilities Commission

**DMM** Demand Management Measures

**DSM** Demand Side Management

**EECBG** Energy Efficiency and Conservation Block Grant

**ENERGY STAR** U.S. government-backed program helping businesses and individuals protect the environment through superior energy efficiency

**EPA** Environmental Protection Agency

**GHG** Greenhouse gas

**GIS** Geographic Information System

**GPCD** Annual Daily Per Capita Water Use

**GPD** Gallons Per Day

**GreenPoint Rated** Residential rating system by non-profit Build It Green

**HSR** High Speed Rail

**HVAC** Heating, ventilation, and air conditioning

**ICLEI** Local Governments for Sustainability

**ILG** Institute for Local Governments

**kW** Kilowatt



**LED** Light-emitting diode

**LEED** Leadership in Energy and Environmental Design

**LEED AP** LEED - Accredited Professionals

**LEED-EB** LEED - certification for a professional that can evaluate LEED for existing buildings

**LG** Local government

**LGOP** Local Government GHG Protocol

**MTCO2e** Metric tons carbon dioxide equivalent

**MW** Megawatt

**OBF** On bill financing

**PV** Photovoltaic

**SB375** California Legislation Known as Redesigning Communities to Reduce Greenhouse Gases

**SEP** California's State Energy Plan

**Strategic Plan** California Energy Efficiency Strategic Plan

**Title 24** The California Building Code governing energy efficiency in buildings

**U.S. DOE** U.S. Department of Energy

**UC** University of California

**USGBC** U.S. Green Building Council, which established the Leadership in Energy and Environmental Design (LEED) green building certification system

**VMT** Vehicle miles traveled

## APPENDIX B

### Implementation Factors

#### KEY

##### **GHG Reduction Potential**

Where known, an estimate of potential greenhouse gas reduction potential expressed in tons of CO<sub>2</sub> equivalent.

##### **Program**

Generally describes if the action is an ongoing, enhanced, or new item.

##### **Gov**

“X” denotes this action affects government facilities and operations only.

##### **Phasing Recommendation**

1 = Phase 1 / Near-Term / 2012 to 2014

2 = Phase 2 / Mid-term / 2015 to 2016

3 = Phase 3 / Long Term / 2017 to 2020

##### **Responsible Entity**

PLNG = Planning

ED = Economic Development

ENG = Engineering

PW = Public Works

MCAG = Merced County Association of Governments

IS = Inspection Services

FIN = Finance

H = Housing

## Goal 1. Enhance Mobility of All Transportation Modes (EM)

Strategies and Actions	GHG Reduction Potential	Program	Gov.	Phase	Responsible Entity
<b>STRATEGY EM 1.1: SITE DESIGN PLANNING:</b>					
EM 1.1.1 Mobility Design Standards		new	-	2	PLNG
EM 1.1.2 Mobility Design Guidelines		new	-	1	PLNG
<b>STRATEGY EM 1.2: TRANSIT PLANNING:</b>	814				
EM 1.2.1 M / Bellevue Transitway		ongoing	-	1	MCAG/PLNG
EM 1.2.2 Mobility Access at Transit Stations		enhanced	-	1	PLNG
EM 1.2.3 Downtown Mobility Connections		enhanced	-	1	PLNG
EM 1.2.4 Transit Connection Between Jobs and Housing		new	-	1	MCAG/PLNG
<b>STRATEGY EM 1.3: BICYCLE PLANNING AND PROJECTS:</b>	2,485				
EM 1.3.1 Trails Along Urban Streams		ongoing	-	1	PLNG/ENG
EM 1.3.2 Coordination with Merced County Facilities		new	-	1	ENG
EM 1.3.3 South Merced Facilities		new	-	1	PLNG/ ENG
EM 1.3.4 20 miles of bike lanes		new	-	1	ENG
EM 1.3.5 Continuous Bike Connections with Land Uses		ongoing	-	ongoing	PLNG/ ENG
EM 1.3.6 Plan Updates		new	-	2	PLNG
EM 1.3.7 Encourage Destination Amenities		new	-	1	PLNG
EM 1.3.8 Expanded Bike Realm in Streets		new	-	1	PLNG/ ENG
EM 1.3.9 Update City Design Standards		ongoing	-	1	ENG
<b>STRATEGY EM 1.4: PEDESTRIAN PLANNING AND PROJECTS:</b>	621				
EM 1.4.1 Pedestrian Master Plan		new	-	1	PLNG
EM 1.4.2 Safe Routes to School		enhanced	-	1	ENG
EM 1.4.3 Shared Streets		new	-	2	ENG/PLNG
EM 1.4.4 Green Streets		new	-	2	ENG/PLNG
EM 1.4.5 Redeveloped Pedestrian Environs		new	-	2	ENG/PLNG

## Goal 2. Sustainable Community Design (SC)

Strategies and Actions	GHG Reduction Potential	Program	Gov.	Phase	Responsible Entity
<b>STRATEGY SC 2.1: COMPACT URBAN FORM / INFILL:</b>					
SC 2.1.1 Focus Development Downtown		ongoing	-	ongoing	PLNG
SC 2.1.2 Encourage Cleanup/Development of Brownfields		new	-	ongoing	PLNG
SC 2.1.3 Encouragement to Develop Infill Sites		new	-	1	PLNG
SC 2.1.4 Limit Rural Residential Expansions		ongoing	-	ongoing	PLNG
SC 2.1.5 Work to Annex Rural Residential Areas		enhanced	-	3	PLNG
SC 2.1.6 Identify Suitable Multi-family Development Sites		new	-	1	PLNG
SC 2.1.7 Identify and Encourage Dev. of Vacant Infill Sites		new	-	1	PLNG
<b>STRATEGY SC 2.2: MIXED-USE / TRANSIT ORIENTED DEV.</b>					
SC 2.2.1 Encourage Mixed Use Developments	6,127	ongoing	-	ongoing	PLNG
SC 2.2.2 Create Neighborhood Activity Nodes		ongoing	-	ongoing	PLNG
SC 2.2.3 Expand Employment Base		ongoing	-	ongoing	ED/PLNG
SC 2.2.4 Industrial Dev. Workforce Housing Nexus Study		new	-	2	ED
SC 2.2.5 Create a Work-live Ordinance		new	-	1	PLNG
SC 2.2.6 Codify Village Core Land Uses		new	-	3	PLNG
SC 2.2.7 Create Business Park Zone		new	-	2	PLNG
SC 2.2.8 Create Mixed Use Industrial Zone		new	-	1	PLNG
SC 2.2.9 Craft the Bellevue Corridor Community Plan		new	-	1	PLNG
<b>STRATEGY SC 2.3: GROWTH MANAGEMENT PLANNING:</b>					
SC 2.3.1 Maintain Reduced Fees in Infill Area		enhanced	-	1	PLNG/ED/ENG
SC 2.3.2 Infrastructure Encouragement Zones		enhanced	-	1	PLNG/ED/ENG
SC 2.3.3 Encourage High-Performance Designs		enhanced	-	2	PLNG/ED/ENG
<b>STRATEGY SC 2.4: COMMUNITY APPEARANCE:</b>					
SC 2.4.1 Gateway Design Standards in County and City		enhanced	-	ongoing	PLNG
SC 2.4.2 Expand Program to Underground Utilities		enhanced	-	ongoing	PLNG
SC 2.4.3 Support Commercial Design Improvement Projects		ongoing	-	ongoing	PLNG
SC 2.4.4 Support Downtown Beautification Efforts		ongoing	-	ongoing	PLNG
SC 2.4.5 Revitalize Existing Urban Villages		new	-	2	PLNG/ PFEDA

### Goal 3. Water Conservation and Technology (WC)

Strategies and Actions	GHG Reduction Potential	Program	Gov.	Phase	Responsible Entity
<b>STRATEGY WC 3.1: WATER CONSERVATION AND TECHNOLOGY:</b>	1,192				
WC 3.1.1 Enforce existing water shortage regulations		ongoing	-	ongoing	PW
WC 3.1.2 Implement voluntary residential water audit program		new	-	2	PW
WC 3.1.3 Enhance Residential Retrofit Program		enhanced	-	1	PW
WC 3.1.4 Implement voluntary Washing Machine Rebate Prgm.		new	-	1	PW
WC 3.1.5 Implement voluntary Conservation Program		new	-	2	PW
WC 3.1.6 Consider a tiered water rate structure		new	-	2	PW
WC 3.1.7 Implement voluntary <i>Low-Flush Toilet Program</i>		new	-	1	PW
WC 3.1.8 Implement the <i>Large Landscape Conservation Program</i>		new	X	1	PW
WC 3.1.9 Enhance the existing <i>Water Metering Program</i>		new	-	2	PW
<b>STRATEGY WC 3.2: REDUCE GROUNDWATER PUMPING:</b>					
WC 3.2.1 Pursue Demand-Reduction programs for potable water		new	-	2	PW
WC 3.2.2 Perform a <i>System Water Audit</i>		new	-	3	PW
WC 3.2.3 Reach a long-water term transfer agreement with MID		new	-	3	PW
WC 3.2.4 Preserve and enhance MID surface water system		new	-	2	PW
WC 3.2.5. Explore use of MID surface water for other than Ag..		new	-	2	PW
WC 3.2.6 Consider Use of Reclaimed Water		new	-	2	PW
WC 3.2.7 Increase water storage capacity		new	-	2	PW/ENG
WC 3.2.8 Upgrade energy efficiency of water systems		new	X	2	PW
<b>STRATEGY WC 3.3: WATER EFFICIENT LANDSCAPES:</b>					
WC 3.3.1 Landscape audits for large commercial customers		new	-	2	PW
WC 3.3.2 Convert industrial & irrigation demands to recycled H <sub>2</sub> O		new	-	3	PW



## Goal 4. Protect Air Resources (AR)

Strategies and Actions	GHG Reduction Potential	Program	Gov.	Phase	Responsible Entity
<b>STRATEGY AR 4.1: REDUCED VEHICLE TRIPS:</b>					
AR 4.1.1 Support employer-based trip reduction programs	1,820	enhanced	X	1	PW
AR 4.1.2 Encourage development of communication infrastructure		enhanced	X	ongoing	all
AR 4.1.3 Implement “Complete Streets” policies	3,097	ongoing	-	ongoing	PLNG/ENG
AR 4.1.4 Enable Transfer Between Mobility Options		ongoing	-	ongoing	PLNG/ENG/MCAG
AR 4.1.5 Increasing Use of Ridesharing	1,259	ongoing	-	ongoing	MCAG
AR 4.1.6 Complete network of bicycle and pedestrian routes		ongoing	-	ongoing	PLNG/ENG
AR 4.1.7 Local car-share program	3,181	new	-	2	PLNG
AR 4.1.8 Narrow Streets for reduced speeds and traffic		new	-	1	PLNG/ENG
AR 4.1.9 Construct park-and-ride lots	217	ongoing	-	ongoing	PLNG/ENG
AR 4.1.10 Encourage Community Based Farms and gardens		new	-	1	PLNG
<b>STRATEGY AR 4.2: CLEAN TRIPS – CLEAN VEHICLES:</b>					
AR 4.2.1 Expand Green Fleet	169	enhanced	X	1	PW
AR 4.2.2 Adopt a City-fleet fuel-efficiency standard		new	X	2	PW
AR 4.2.3 Improved Traffic Signal Coordination	648	new	-	1	ENG
AR 4.2.4 Reduce Idling	284	new	-	2	PLNG/IS
AR 4.2.5 Establish City Design Standards for traffic roundabouts		new	-	2	ENG
AR 4.2.6 Purchase fuel efficient vehicles / alternative fuel vehicles		new	X	1	PW
AR 4.2.7 Retire or sell old and underutilized vehicles		ongoing	X	ongoing	PW
AR 4.2.8 Explore Neighborhood Electric Vehicle Networks		new	-	ongoing	all
AR 4.2.9: Explore methods to reduce heavy-duty diesel emissions		new	-	1	PLNG/ED
<b>STRATEGY AR 4.3: REDUCE NON-VEHICULAR EMISSIONS:</b>					
AR 4.3.1 Participate in the Clean Green Yard Machine Program		new	-	1	PW

## Goal 5. Waste Reduction (WR)

Strategies and Actions	GHG Reduction Potential	Program	Gov.	Phase	Responsible Entity
<b>STRATEGY WR 5.1: REDUCE, REUSE, AND RECYCLE:</b>					
WR 5.1.1 Reuse construction materials		new	-	2	PW/IS
WR 5.1.2 Recycling / hazardous-waste facility		new	-	2	PW
WR 5.1.3 Develop a volunteer “Master Recycler” program		new	-	1	PW
WR 5.1.4 Establish a Business and Resident reuse campaign		new	-	2	PW
WR 5.1.5 Implement State Commercial recycling requirements		new	-	1	PW
WR 5.1.6 Implement Green Code		new	-	1	IS
WR 5.1.7 Provide recycling opportunities at special events		new	<b>X</b>	1	PW
WR 5.1.8 Form waste-reduction programs w/schools and business		new	-	2	PW
WR 5.1.9 Develop and implement a waste audit program		new	-	3	PW
WR 5.1.10 Consider establishing recycling incentives		new	-	2	PW
WR 5.1.11 Consider program to evaluate major waste generators		new	-	2	PW
WR 5.1.12 Waste Diversion and Recycling Programs		ongoing	-	ongoing	PW
WR 5.1.13 Consider implementing food waste segregation		new	-	2	PW

## Goal 6. Increase the zuse of Renewable Energy Sources (RE)

Strategies and Actions	GHG Reduction Potential	Program	Gov.	Phase	Responsible Entity
<b>STRATEGY RE 6.1: RENEWABLE ENERGY SYSTEMS:</b>					
RE 6.1.1 Encourage installation of solar energy systems	15,343	new	-	1	IS
RE 6.1.2 Implement solar hot water & space heating program	1,347	new	-	2	IS
RE 6.1.3 Encourage on-site renewable energy systems		new	-	3	IS
RE 6.1.4 Incentivize siting of solar hot water systems for new pools		new	-	1	IS
RE 6.1.5 Install methane-powered electric generators at WWTP		new	-	2	PW
RE 6.1.6 Enable B20 Biodiesel to fuel City Fleet		new	<b>X</b>	3	PW
RE 6.1.7 Adopt code allowances for renewable energy generators		new	-	1	PLNG
RE 6.1.8 Community financing of renewable systems		new	-	ongoing	Community
RE 6.1.9 Establish AB 811 energy financing districts		new	-	1	IS
RE 6.1.10 Revolving loan fund for renewable energy		new	-	1	IS
RE 6.1.11 Peaker Plant Regulation		new	-	1	PLNG
RE 6.1.12 Geothermal and grey-water plumbing options		new	-	1	IS

## Goal 7. Building Energy Conservation (BE)

Strategies and Actions	GHG Reduction Potential	Program	Gov.	Phase	Responsible Entity
<b>STRATEGY BE 7.1: GREEN CITY FACILITIES AND INFRASTRUCTURE:</b>					
BE 7.1.1 Complete Phase I of the City Energy Retrofit Project	825	ongoing	X	ongoing	PW
BE 7.1.2 Construct City buildings to exceed Title 24 by 15%.		new	X	1	IS
BE 7.1.3 Renewable energy systems on City-owned facilities		new	X	1	IS
BE 7.1.4 Daylight janitorial services		new	X	1	PW
BE 7.1.5 Energy efficient standard procurement policy		new	X	2	all
BE 7.1.6 Energy efficiency upgrade when replacing equipment		new	X	1	PW
BE 7.1.7 Lighten colors of rooftops and street paving		new	X	1	PW
BE 7.1.8 Recover food waste		new	X	1	PW
<b>STRATEGY BE 7.2: ENERGY EFFICIENCY IN NEW DEVELOPMENT:</b>					
BE 7.2.1: Implement the minimum CALGreen standards		ongoing	-	1	IS
BE 7.2.2: Promote enhanced energy conservation standards		new	-	1	IS/PLNG
BE 7.2.3: Update the City's Public Infrastructure Design Standards		new	-	1	ENG
BE 7.2.4: Energy Efficiency Performance Code	3,970	new	-	3	IS/PLNG
<b>STRATEGY BE 7.3: RESIDENTIAL ENERGY EFFICIENCY:</b>					
BE 7.3.1 Assessment district bond financing program		new	-	1	IS
BE 7.3.2 Public Information on Energy Conservation		new	-	1	HOUSING
BE 7.3.3 Low-income homeowners and renters energy audits		new	-	1	HOUSING
BE 7.3.4 Low/moderate income family weatherization program	1,743	enhanced	-	1	HOUSING
BE 7.3.5 Promote point-of-sale energy audits and retrofits		new	-	1	IS
BE 7.3.6 Encourage energy audits at time of remodels		new	-	1	IS
BE 7.3.7 Explore financing tool for residential energy retrofits	4,218	new	-	1	IS/FIN
BE 7.3.8 Promote Energy Upgrade California	12,537	new	-	1	IS
BE 7.3.9 Residential Rental energy efficiency strategies		new	-	1	IS

Strategies and Actions	GHG Reduction Potential	Program	Gov.	Phase	Responsible Entity
<b>STRATEGY BE 7.4: COMMERCIAL AND INDUSTRIAL ENERGY PERFORMANCE:</b>			-		
BE 7.4.1 Implement a “Green Building” Incentive Program	10,350	new	-	1	IS
BE 7.4.2 Free Resource and Energy Business Evaluation	18,129	new	-	1	IS
BE 7.4.3 Energy Efficiency Rebate Programs		new	-	1	IS
BE 7.4.4 Establish PACE (AB 811) program	4,218	new	-	1	IS/FIN
BE 7.4.5 Revolving loan fund for industrial Energy Projects		new	-	1	IS/FIN
BE 7.4.6 Green building standards for remodeled buildings		new	-	3	IS/PLNG
<b>STRATEGY BE 7.5: URBAN FORESTRY / HEAT ISLAND EFFECT:</b>					
BE 7.5.1 Community Planting Program		enhanced	-	1	PW
BE 7.5.2 Heat-Island Effect -Guidelines	836	new	-	2	PLNG/IS
BE 7.5.3 Merced Tree Planting Initiative	2,524	new	-	1	PW
BE 7.5.4 Protect and Conserve Tree-Cover Areas		new	-	2	PW
BE 7.5.5 Regulate removal and replacement of trees		new	-	2	PLNG/PW



## Goal 8. Public Outreach and Involvement (PO)

Strategies and Actions	GHG Reduction Potential	Program	Gov.	Phase	Responsible Entity
<b>STRATEGY PO 8.1: COMMUNITY RESOURCE:</b>					
PO 8.1.1 Form Partnership with local energy utilities		new	-	1	all
PO 8.1.2 Coordinate Bike Plan Efforts with County and UCM		ongoing	-	ongoing	PLNG/ENG
PO 8.1.3 Coordinate waste reduction efforts with State		ongoing	-	ongoing	PW
PO 8.1.4 Implement an Energy Program Website		new	-	1	PW
PO 8.1.5 DoRight Leadership Corps		new	-	1	Community
PO 8.1.6 Work with Community Action Agency weatherization		new	-	1	IS/HOUSING
PO 8.1.7 Cool Roofs and Pavement Campaign		new	-	1	IS
PO 8.1.8 Support the San Joaquin Valley Blueprint		new	-	ongoing	PLNG
<b>STRATEGY PO 8.2: SUPPORT A GREEN ECONOMY:</b>					
PO 8.2.1 Create a Green Business Challenge		new	-	1	ED
PO 8.2.2 Encourage efforts of REACON team		new	-	ongoing	ED
PO 8.2.3 Partnerships with area employers		new	-	ongoing	ED
PO 8.2.4 Green Business Program		new	-	1	ED
<b>STRATEGY PO 8.3: SUPPORT SUSTAINABLE NEIGHBORHOODS:</b>					
PO 8.3.1 LEED Neighborhood Planning		new	-	2	PLNG
PO 8.3.2 Community-Climate Action Challenge Program		new	-	1	PLNG
PO 8.3.3 Development of the Sustainable Community Strategy		new	-	ongoing	PLNG/HOUSING
PO 8.3.4 Revitalized Urban Villages		new	-	2	PLNG

## APPENDIX C

### References and Works Cited

1. Mark Lubell, Ph.D., Bret Beheim, Vicken Hillis, Susan Handy, Ph.D., *"Achieving Sustainability in California's Central Valley."* UC Davis, Sustainable Transportation Center. (pgs. ES1, ES8, 3, 8, 20, and 21)
2. Chancellor's Advisory Committee on Sustainability. *"UC Merced Sustainability Strategic Plan."* January 2010. (pgs. 7, 8, 9, 12, and 52)
3. Kevin Creed. "University of California, Merced." Association for the Advancement of Sustainability in Higher Education (AASHE).  
<http://www.aashe.org/resources/profiles/2009/university-california-merced>. Accessed March 31, 2011.
4. Pacific Council on International Policy. *Preparing for the Effects of Climate Change – A Strategy for California*. A Report by the California Adaptation Advisory Panel to the State of California. 2010. (pg. ii).
5. San Joaquin Valley Blueprint, Draft Implementation Strategy January 14, 2011. Mintier Harnish.
6. 2010 California Regional Progress Report, by Applied Development Economics, Inc. and Collaborative Economics, Inc. page 82.
7. Understanding the New Water Conservation Mandates: Western City, July 2010. The Monthly Magazine of the League of California Cities. Kyra Ross.  
<http://www.westerncity.com/Western-City/July-2010/Understanding-the-New-Water-Conservation-Mandates/>
8. City of Merced 2010 Urban Water Management Plan. Carollo Engineers.  
Pages 3-1, 3-12, 3-22, 4-12, 6-3 to 6-7.
9. City of Merced Water Conservation Activities, 2011. Leah Brown, Water Conservation Specialist.
10. Energy Upgrade California  
<http://www.lgc.org/freepub/energy/newsletter/spring2011/page01.html>
11. PACE  
<http://www.lgc.org/freepub/energy/newsletter/spring2011/page01.html>
12. Urban Forestry  
<http://www.fs.fed.us/ccrc/topics/urban-forests/>
13. Clean Energy Jobs and American Power Act (Senate Bill 1733)  
<http://www.opencongress.org/bill/111-s1733/show>

- <http://thinkprogress.org/romm/2009/09/30/204727/clean-energy-jobs-and-american-power-act/>
14. California CAP AND TRADE Program  
<http://www.greenbiz.com/news/2011/06/03/california-cap-and-trade-may-start-year-behind-schedule>
  15. "Local Government Energy Efficiency Best Practices." Local Government Commission.
  16. Model Policies for Greenhouse Gases in General Plans - *A Resource for Local Government to Incorporate General Plan Policies to Reduce Greenhouse Gas Emissions*. California Air Pollution Control Officers Association (CAPCOA). June 2009
  17. Energy Aware Planning Guide, Emergency and Greenhouse Gas Reduction Estimates. California Energy Commission. September 2009
  18. 3 Sustainability Models, Bob Willard, Jul 20th, 2010.  
<http://sustainabilityadvantage.com/2010/07/20/3-sustainability-models/>
  19. Community-Based Sustainable Living Commitment Programs, such as, [www.Socialchange2.com](http://www.Socialchange2.com)  
[www.empowermentinstitute.net](http://www.empowermentinstitute.net)  
[dgershon@empowermentinstitute.net](mailto:dgershon@empowermentinstitute.net)
  20. City of Tulare Draft Climate Action Plan
  21. The Valley Innovative Energy Watch (VIEW) Partnership.  
<http://www.sjvcleanenergy.org/content/view-partnership>
  22. Planning for a new Energy and Climate Future. Scott Shuford, Suzanne Rynne and Jan Mueller. Planning Advisory Service Report #558. February 2010.
  23. Empowering Sustainable Communities, ICLEI USA Annual Report 2010
  24. US Mayors Climate Protection Agreement, Climate Action Handbook. ICLEI - Local Governments for Sustainability with support from the City of Seattle and the U.S. Conference of Mayors.
  25. Local Government Strategic Energy Action Report. Navigant Consulting, SAIC, and Innovologie for the California Public Utilities Commission Energy Division. June 15, 2010
  26. Climate Action Plan Template. Statewide Energy Efficiency Collaborative (SEEC).
  27. Energy and Land Use. California Planner Newsletter. California Planning Chapter, American Planning Association. January-February 2010.
  28. A Comeback for PACE Programs? Fingers are Crossed. ICLEI article and website  
<http://www.icleiusa.org>. July 21, 2011.
  29. California Delays its Carbon Trading Program for a Year. Los Angeles Times.  
[www.latimesblogs.latimes.com/greenspace](http://www.latimesblogs.latimes.com/greenspace). June 2011.

30. Abbott and Kindermann, LLP, 9<sup>th</sup> Annual Land Use, Environmental and Real Estate Law Update. 2010.
31. California Air Resources Board gives green light to California's emissions trading program. California Environmental Protection Agency and Air Resources Board. [www.arb.ca.gov](http://www.arb.ca.gov). December 2010.
32. *Fresno, California Overcomes Resistance to Narrow Streets*. From Livable Places Update, October 2009. [www.lgc.org](http://www.lgc.org)
33. *Streets no Longer the Sole Purview of Cars*. From Livable Places Update, March 2009. [www.lgc.org](http://www.lgc.org)
34. *Green Streets as Twofers* . From Livable Places Update, November 2009. [www.lgc.org](http://www.lgc.org), and Sustainable City Network article, "*Green Streets Go Mainstream in Portland*," July 20, 2011. [www.sustainablecitynetwork.com](http://www.sustainablecitynetwork.com)
35. *Green Streets as Twofers* . From Livable Places Update, November 2009. [www.lgc.org](http://www.lgc.org)
36. *A unique Opportunity to Address Climate Change*. From Livable Places Update, March 2009. [www.lgc.org](http://www.lgc.org)
37. *Sacramento County Winds EPA Grant to Fight Climate Change*. From Local Government Commission Reports, Volume 31, No. 5, May 2010. [www.lgc.org](http://www.lgc.org)
38. *City of Richmond Designs For Pedestrian Safety*. From Local Government Commission Reports, Volume 31, No. 5, May 2010. [www.lgc.org](http://www.lgc.org)
39. *Walk, Don't Drive – to the Economic Recovery*. From Livable Places Update, May 2011. [www.lgc.org](http://www.lgc.org)
40. *State Looks to Fund Better Planning*. From Livable Places Update, January 2010. [www.lgc.org](http://www.lgc.org)
41. *Yosemite is Calling – Join Us march 18-20*. From Livable Places Update, December 2009. [www.lgc.org](http://www.lgc.org)
42. *City of Chula Vista's FREBE Program*. From Local Government Commission Reports, Volume 31, No. 9, Sept. 2010. [www.lgc.org](http://www.lgc.org)
43. *Online Toolkit Helps California Cities Go Solar*. From Local Government Commission Reports, Volume 30, No. 11, December. 2009. [www.lgc.org](http://www.lgc.org)
44. *Walk, Don't Drive – Key to Health As Well As Economic Recovery*. From Livable Places Update, May 2011. [www.lgc.org](http://www.lgc.org)
45. *Santa Barbara is included in The Atlantic's list o the "Eleven Most Walk-Friendly Cites in the U.S."*. From Livable Places Update, May 2011. [www.lgc.org](http://www.lgc.org)

46. *Compact, Mixed-Use Communities Save Local Governments Money*. From Livable Places Update, September 2010. [www.lgc.org](http://www.lgc.org)
47. *DoRight Leadership Corps Youth Conduct Sustainability Assessments*. From Institute of Local Government website, Downloaded on 10-22-2010. [www.ca-ilg.org/print](http://www.ca-ilg.org/print)
48. Climate Action Plan, Town of Ross. November 2010.
49. California. California Natural Resources Agency. 2009 California Climate Adaptation Strategy. 2 Dec. 2009. Web. 28 Sept. 2010. <http://www.climatechange.ca.gov/adaptation/>
50. Part 6, Title 24: California Energy Code.  
Title <http://greencomplianceplus.markenglisharchitects.com/technical/calgreen-greenpoints-title-24-whats-deal/>
51. <http://www.epa.gov/climatechange/wycd/waste/generalinfo.html#q1>
52. ICLEI Fact Sheet, How 38 Local Governments Fund Sustainability Staff and Operations. March 2011
53. Western City Magazine. "Greenhouse Gas Emission Reduction Potential of Various Climate Action Plans" July 2009, pg. 13.
54. Climate Protection Manual for Cities. Chapter 5: Local Action Plan Best Bets – Businesses. Natural Capitalism Solutions. 2006.

## Appendix D

### Greenhouse Gas Backcast and Forecast Methodologies

This section describes the tools and methods used to estimate 1990 and 2020 GHG emissions for community-based and government-based sectors. [Note that “Government-based” emissions are a subset of “Community Based” Facilities (see *City of Merced 2008 Baseline GHG Emission Inventory*)].

The results of the emission backcast and forecast estimation are summarized in Table 1. The emission forecast represents “Business As Usual” activities, and therefore does not account for any emission reductions that will result from implementation of the City’s Climate Action Plan. The forecast amounts in this table are the result of calculations of the applied growth factors into ICLEI’s Clean Air and Climate Protection 2009 Software.

Based on the Air Resources Board Department interpretations of the AB 32 Scoping Plan and its supporting documents, the “baseline year” of greenhouse gas emission inventories is understood as any year between 2005 and 2008. If the baseline GHG Emission Inventory occurred between 2005 and 2008, then per this interpretation, a 15% reduction below 2005-2008 emission levels is understood to equal the 1990 emissions equivalent and such method would satisfy the guidelines of AB 32. Unless otherwise described in this index, a 15% reduction below the 2008 emission inventory was utilized to determine the 1990 emission levels for all community and government sectors.

<b>Table 1: City of Merced Total Emissions by Benchmark Years</b>				
<b>Emission Sources</b>		<b>Benchmark Years</b>		
<b>Category</b>	<b>Sector</b>	<b>1990</b>	<b>2008</b>	<b>2020</b>
Community	Residential	88,788	104,457	132,476
	Commercial/Industrial	125,778	147,974	166,741
	Transportation	123,729	145,563	188,832
	Solid Waste	11,686	7,754	9,847
Government	Commercial & Industrial	10,525	12,382	12,382
	Transportation	4,148	4,880	4,880



## Community-Based Emissions

### RESIDENTIAL

City Staff researched for and gathered data concerning changes in population and housing units. This data is presented in Table 2, and is the source from which growth rate factors were figured. Estimates, either provided in the data set or determined from the set, are shown in italics.

<b>Table 2:</b> <b>Compilation of City of Merced Population and Housing Units</b>								
Data Source	1990		2008		2010		2020	
	Pop.	Housing Units	Pop.	Housing Units	Pop.	Housing Units	Pop.	Housing Units
1					81,500	27,167	107,600	<i>35,866</i>
2			<b>80,608</b>	<b>28,066</b>				
3					78,958*	27,446		
4	<b>56,216</b>	<b>18,282</b>						

\*The California Department of Finance estimated the City's population at 79,259 on January 1, 2011.

#### DATA SOURCE

1. Merced County Association of Governments (MCAG), July 2010.
2. Census Data, California State Department of Finance, Jan 1, 2008.
3. Census Data, California State Department of Finance, April 1, 2010.
4. Merced Vision 2015 General Plan, 1997.

#### **2020 (Forecast)**

The 2020 forecast was determined by use of growth rate factor that was figured from the estimated change in number of residential dwellings between 2008 and 2020. Table 2 depicts the data set utilized by staff to figure growth rates. In order to achieve this growth in housing units between 2010 and 2020, a growth factor of 2% was utilized.

#### **1990 (Backcast)**

A 15% reduction below the 2008 emission level was utilized to estimate the 1990 emission levels.

## **COMMERCIAL / INDUSTRIAL**

### ***2020 (Forecast)***

City Staff researched for and gathered data concerning anticipated changes in commercial, industrial, and institutional floor area. Based on information received from the sources below, staff used an annual growth rate factor of 1%.

#### Sources

2010 Forecast Report for Northern and Central Valley by Gubb & Ellis PG&E and MID

July 2011 California and Metro Forecast, University of the Pacific.

Conversation with Frank Quintero, Director of Economic Development

David L. Spaur, CECd, President – CEO, Merced County Economic Development Corporation

### ***1990 (Backcast)***

A 15% reduction below the 2008 emission level was utilized to estimate the 1990 emission levels.

## **TRANSPORTATION**

### ***2020 (Forecast)***

Matt Fell, Senior Planner with the Merced County Association of Governments (MCAG), estimated the growth in vehicle miles travelled from 2008 to 2020 to be 2.65% per year. This growth rate was applied to both gasoline and diesel powered heavy duty vehicles, light trucks and passenger cars to estimate the 2020 forecast of 188,832 tons of carbon dioxide equivalent emissions. The 2008 Emission level was 145,563 carbon dioxide equivalent.

### ***1990 (Backcast)***

A 15% reduction below the 2008 emission level was utilized to estimate the 1990 emission levels.

## **WASTE**

### ***2020 (Forecast)***

The 2020 forecast was determined by use of growth rate factor that was figured from the estimated change in tonnage of wastes between 2008 and 2020. According to Dan Arnold, Public Works Manager Internal Services, the City experiences on average a 2% annual increase in waste tonnage. This 2% growth rate factor was used to estimate the 2020 greenhouse gas emissions for the solid waste sector.

The 2008 City of Merced Emission Inventory assumed a total refuse amount of 49,332 tons, not including 3,536 tons of recycled goods and 9,516 tons of green waste. These amounts were diverted from the landfill. Landfill related emissions in 2008 were estimated to be 7,438 tons of carbon dioxide

equivalent. Applying a 2% annual growth rate to the 2008 refuse tonnage results in 62,565 tons of land-filled waste, with an associated 9,847 tons of annual carbon dioxide equivalent emissions.

***1990 (Backcast)***

According to the Source Reduction and Recycling Element (SRRE) for the City of Merced as required by AB939, Merced City's 1990 waste tonnage figure sent to the landfill was 74,506 tons. According to Stan Murdock, Public Works Director of Operations, there was no diversion program of any size in 1990 either in the City or at the landfill, so this amount represents all sources of waste from city collection and private disposal. Therefore, to determine 1990 emissions, Staff used the 74,506 total waste tonnage figure that showed higher greenhouse gas emissions than what occur today.

## APPENDIX E

### CAP Strategies and Actions for New Developments

This Appendix includes the strategies and actions of the City's Climate Action Plan that are applicable to new development projects. It is crafted as a guide to the development community and as a tool for the Planning Staff during review of development proposals.

#### STRATEGY EM 1.5: MOBILITY DEVELOPMENT REVIEW POLICIES

**EM 1.5.1: Apply the following Transit-Related standards to new development projects.**

- Continue to review land use decisions in the vicinity of the entire length of "M" Street to avoid creating or increasing conflicts with the intent of a major transitway (General Plan Policy T-2.1, Implementing Action 2.1.a).
- Promote land development patterns and site design criteria that support and enhance the use of public transit (General Plan Policy T-2.2, Implementing Action 2.2.a).
- Whenever feasible, avoid residential subdivision designs that require pedestrians to duplicate walking distance (double-back) to reach public transit routes (General Plan Policy T-2.2, Implementing Action 2.2.b).
- Whenever feasible, avoid creating barriers that prevent convenient access to current or prospective public transit routes (General Plan Policy T-2.2, Implementing Action 2.2.c).
- Include public transportation access in the review process for major public and private development projects, as well as all significant land use design proposals considered by the City (General Plan Policy T-2.3, Implementing Action 2.2.A).
- Provide off-street passenger loading/unloading at major public transportation destinations (shopping centers, etc.) whenever possible (General Plan Policy T-2.3, Implementing Action 2.2.a).
- Continue to review land use decisions in the vicinity of "M" Street and Bellevue Road to avoid creating or increasing conflicts with the proposed future major commercial and office park sites at the major transfer point between designated transitway corridors (General Plan Policy T-2.1, Implementing Action 2.1.c).
- Work cooperatively with Merced County and other interested agencies to review and evaluate development proposals in the vicinity of Bellevue Road that might conflict with the prospective Bellevue Transitway (General Plan Policy T-2.1, Implementing Action 2.1.f).

**EM 1.5.2: Apply the following Bicycle-Related standards to new development projects.**

- Develop guidelines for public and private development relating to the design and location of bicycle parking facilities for both residential and non-residential uses and consider a bike parking ordinance (General Plan Policy T-2.5, Implementing Action 2.5.a).

- Provide links between parks, schools, and open space areas via the bikeway system (General Plan Policy T-3.2, Implementing Action 3.2.c).
- Expand the existing bikeway system to all new growth areas as development occurs (General Plan Policy T-3.2, Implementing Action 3.2.c).
- Make use of creekside areas, utility line easements, abandoned railroad rights-of-way, and canal easements for bikeway purposes (General Plan Policy T-3.2, Implementing Action 3.2.b).

**EM 1.5.3: Apply the following Pedestrian-Related standards to new development projects.**

- Retain parkstrip and street tree planting requirements (General Plan Policy T-2.7, Implementing Action 2.7.a).
- Continue to require sidewalks and pedestrianways for subdivisions and other development projects (General Plan Policy T-2.7, Implementing Action 2.7.e).
- Continue to encourage safe and convenient pedestrian environments in the Downtown and other areas that attract a great deal of pedestrian traffic (General Plan Policy T-2.7, Implementing Action 2.7.f).
- Encourage the planting of shade trees and, as a minimum, plan for the prospective establishment of rest areas with seating facilities along major pedestrianways (General Plan Policy T-2.7, Implementing Action 2.7.h).
- Continue to review and evaluate possible options for dealing with the issue of incomplete pedestrian access to development projects that will be major pedestrian destinations (General Plan Policy T-2.3, Implementing Action 2.2.a).
- Continue to review land use and project proposals with the intent to avoid pedestrian barriers that prevent or create unnecessarily circuitous access to community and commercial areas (General Plan Policy T-2.8, Implementing Action 2.8.c).

**EM 1.5.4: Consider amendments to City policies and ordinances where appropriate to implement the following actions of the Climate Action Plan:**

- provision of amenities such as transit shelters, secure bicycle parking, and attractive pedestrian pathways.

**EM 1.5.4: Encourage all development projects proposed within 2,000 feet of an existing or planned light rail transit, commuter rail, express bus or transit corridor stop, to incorporate site design measures that improve accessibility to the transit system (General Plan Policy L-3.3 Implementing Action 3.3.d).**

**EM 1.5.5: Ensure multiple points of access for all new development (General Plan Policy L-1.9, Implementing Action 1.9.a).**

## **STRATEGY SC 2.5: COMMUNITY DESIGN DEVELOPMENT REVIEW POLICIES**

### **Compact Urban Form / Infill Policies**

- SC 2.5.1:** Promote higher residential densities within the Merced urban area (General Plan Policy UE-1.2. - Implementing Action 1.2.d).
- SC 2.5.2:** Promote the Use of the Residential Planned Development Zoning Designation (General Plan Policy H-1.1. - Implementing Action 1.1.b).
- SC 2.5.3:** Encourage infill of vacant parcels (General Plan Policy L-3.2. - Implementing Action 3.2.a).
- Encourage infill projects that are determined to be compatible with existing development.
  - Encourage growth to occur in and around activity centers, transportation nodes, underutilized infrastructure systems, and redevelopment areas.
  - Work with land owners to re-designate vacant lands suitable for higher densities or for transit/pedestrian-oriented developments during general plan updates and periodic reviews.
- SC 2.5.4:** Encourage infill and redevelopment projects within the urban area that could enhance the effectiveness of the transit system (General Plan Policy L-3.2. - Implementing Action 3.2.b).
- Encourage projects that increase pedestrian activity and mixed-uses.
  - Encourage commercial uses that are complementary to urban employment centers.
  - Strategically locate high-density development to provide good transit access.
- SC 2.5.5:** Plan areas for higher density development within 1/4 mile of locations identified as transit hubs and commercial centers (General Plan Policy L-3.1 - Implementing Action 3.1.c).

### **Mixed Use Development Policies**

- SC 2.5.6:** Encourage residential and/or office above retail in the downtown area and in neighborhood commercial cores (General Plan Policy L-1.2 - Implementing Action 1.2.b).
- SC 2.5.7:** Encourage higher-density residential developments within walking distance (approx. ¼ mile) of commercial centers (General Plan Policy L-1.2 - Implementing Action 1.2.a).
- SC 2.5.8:** Continue to allow second units in single-family areas (General Plan Policy L-1.2 - Implementing Action 1.2.c).
- SC 2.5.9:** Encourage duplexes on corner lots in low-density residential areas (General Plan Policy L-1.2 - Implementing Action 1.2.d).



- SC 2.5.10:** Consider density increases for existing residential sites where the necessary conditions exist for higher densities (General Plan Policy L-1.2 - Implementing Action 1.2.e).
- SC 2.5.11:** Provide a Range of Services Adjacent to And Within Industrial Areas to Reduce Auto Trips (General Plan Policy L-2.4).
- SC 2.5.12:** Continue to allow services, such as restaurants and other retail commercial uses which mainly serve industrial employees, to locate in industrial zones as discretionary uses (General Plan Policy L-2.4 - Implementing Action 2.4.b).
- SC 2.5.13:** Locate and Design New Commercial Developments To Provide Good Access from Adjacent Neighborhoods and Reduce Congestion on Major Streets (General Plan Policy L-2.7).
- Commercial centers shall be designed to provide direct vehicular and pedestrian access from surrounding neighborhoods. In no case shall trips which could be internal (from adjacent neighborhood to center) be forced onto an arterial (General Plan Policy L-2.7 - Implementing Action 2.7.b).
  - Commercial developments shall be designed to encourage pedestrian, bicycle, and transit access (General Plan Policy L-2.7 - Implementing Action 2.7.e).
- SC 2.5.14:** Encourage a Mixture of Uses And Activities That Will Maintain the Vitality of the Downtown Area (General Plan Policy L-2.8 - Implementing Action 2.7.e).
- SC 2.5.15:** Encourage pedestrian or transit-friendly designs at suitable locations (General Plan Policy L-3.1 - Implementing Action 3.1.a).
- SC 2.5.16:** Encourage higher housing densities in areas served by the full range of urban services (General Plan Policy L-3.1 - Implementing Action 3.1.d).
- SC 2.5.17:** Work closely with school districts to help them choose school site locations that allow students to safely walk or bicycle from their homes (General Plan Policy L-3.1 - Implementing Action 3.1.f).
- SC 2.5.18:** Consider air quality and mobility when reviewing any proposed change to the land use pattern of this community (General Plan Policy L-3.1 - Implementing Action 3.1.h).
- SC 2.5.19:** Encourage the Location of Multi-Family Developments on Sites With Good Access to Transportation, Shopping, Employment Centers, and Services (General Plan Policy L-1.7).
- Designate areas adjoining arterial streets, major transportation routes and commercial areas for multi-family development (General Plan Policy L-1.7 - Implementing Action 1.7.a).
  - Use the Urban Village Concept to promote higher density residential development adjacent to commercial services and transit (General Plan Policy L-1.7 - Implementing Action 1.7.b).
- SC 2.5.20:** Apply Transit-Ready Development or Urban Village Design Principles to New Development in the City's New Growth Areas (General Plan Policy UD-1.1).

- SC 2.5.21:** Distribute and Design Urban Villages to Promote Convenient Vehicular, Pedestrian, and Transit Access (General Plan Policy UD-1.2).
- SC 2.5.22:** Encourage development that is mixed use, infill, and higher density.
- SC 2.5.23:** Encourage a “balanced” community, where residents do not have to travel long distances for service needs.
- SC 2.5.24:** Work to preserve and enhance existing neighborhoods and commercial districts which have transit and pedestrian-friendly designs and protect them from development that is incompatible in design, scale, or use (General Plan Policy L-3.1 - Implementing Action 3.1.b).
- SC 2.5.25:** Encourage mixed-use developments that provide commercial services such as day care centers, restaurants, banks, and stores near employment centers (General Plan Policy L-3.1 - Implementing Action 3.1.e).
- SC 2.5.26:** Encourage Mixed Use Development (General Plan Policy H-1.1. - Implementing Action 1.1.c).

### **Growth Management Policies**

- SC 2.5.27:** The City should continue to require that all new urban development and annexations be contiguous to existing urban areas and have reasonable access to public services and facilities (General Plan Policy UE-1.3. - Implementing Action 1.3.a).
- SC 2.5.28:** Consider expansion of the City’s SUDP/SOI boundary for areas within the area of interest when certain conditions are met. (General Plan Policy UE-1.6)
- SC 2.5.29:** The City shall encourage phasing of new development (General Plan Policy UE-1.3. - Implementing Action 1.3.c).
- SC 2.5.30:** Target the State Route 59 (South) Corridor as a priority annexation area (General Plan Policy UE-1.5. - Implementing Action 1.5.f).
- SC 2.5.31:** Continue to limit the expansion of City utilities to only those within an established urban expansion boundary (General Plan Policy UE-1.2. - Implementing Action 1.2.c).

### **Community Appearance Policies**

- SC 2.5.32: Encourage the Design and Construction of Aesthetic Streetscapes.**
- Encourage the design of buildings that are in scale with adjacent development and harmonize with the character of the area or neighborhood (General Plan Policy UD-1.5, Implementing Action 1.5.b).

- Discourage the visual monotony along major streets created by designs which use uninterrupted walls or fences with little or no landscaping (General Plan Policy UD-1.5, Implementing Action 1.5.c).
- Encourage the development of methods to require acceptable levels of landscaping for new development and for effective maintenance in highly visible areas of the community (General Plan Policy UD-1.5, Implementing Action 1.5.d).
- Landscape designs should incorporate water conservation and low maintenance features (General Plan Policy UD-1.5, Implementing Action 1.5.d).

**SC 2.5.33:** Promote and Facilitate Core Commercial Design Principles in Village Commercial (General Plan Policy UD-1.3), by:

- Each Village must have a mixed-use Core Commercial area containing ground floor retail and commercial space, including: Convenience Centers, Neighborhood Centers, and Community Centers (General Plan Policy UD-1.3, Implementing Action 1.3.a).
- Core Commercial areas must be developed at sufficient intensity (typically a F.A.R. of at least 0.25) to create a focus of activity at the center of Villages (General Plan Policy UD-1.3, Implementing Action 1.3.a).
- Office areas should be built at an intensity that concentrates activity near transit stops and Core Commercial areas (General Plan Policy UD-1.3, Implementing Action 1.3.a).

**SC 2.5.34:** Design and Develop Public and Quasi-Public Buildings and Uses Utilizing Transit-Ready Development or Urban Village Principles (General Plan Policy UD-1.5), by:

- Civic services should be placed in central locations in Villages (General Plan Policy UD-1.5, Implementing Action 1.5.a).
- School sites should be selected by their respective districts in a way that provides opportunities to use pedestrian trails and bicycle routes to and from school and minimizes the need for students to cross arterial streets (General Plan Policy UD-1.5, Implementing Action 1.5.b).
- Quasi-Public buildings such as religious buildings, fraternal halls, daycare facilities and private schools are encouraged to be situated and designed to face neighborhood parks or village greens (General Plan Policy UD-1.5, Implementing Action 1.5.c).
- Utility facilities such as wells, pump stations, and electrical substations should be located in sites poorly suited for other forms of development, such as small sites bounded by high voltage power lines and arterials (General Plan Policy UD-1.5, Implementing Action 1.5.d).
- Public parks and plazas should be designed for both active and passive uses. They should reflect and reinforce the character of the surrounding area (General Plan Policy UD-1.5, Implementing Action 1.5.e).
- Encourage subdivision designs that provide neighborhood parks in proximity to activity centers, such as schools, libraries, and community centers (General Plan Policy UD-1.5, Implementing Action 1.5.f).

## **MEASURE WC 3.4: WATER CONSERVATION DEVELOPMENT REVIEW POLICIES**

### **Water Conservation Policies**

- WC 3.4.1:** Within a year of adoption of the Climate Action Plan, the City shall consider amendments to City policies and ordinances where appropriate to implement the following actions of the Climate Action Plan:
- Use of both potable and non-potable water to the maximum extent practicable; low flow appliances (i.e., toilets, dishwashers, shower heads, washing machines, etc.); automatic shut off valves for sinks in restrooms; drought resistant landscaping; “Save Water” signs near water faucets;
  - Create water efficient landscapes;
  - Use gray water. (Gray water is untreated household waste water from bathtubs, showers, bathroom wash facilities, and water from washing machines); and,
  - Provide education about water conservation and available programs and incentives.
- WC 3.4.2:** Strengthen land use and development guidelines for new buildings and retrofits. The permitting process for developers and contractors can include clear parameters for integrating water conservation infrastructure and technologies, including low-flush toilets and low-flow showerheads
- WC 3.4.3:** Implement the Water Efficient Landscape Ordinance as required by AB 1881.
- WC 3.4.4:** Encourage the use of development techniques to direct rooftop runoff to pervious areas such as yards, garden beds, vegetated/soft bottom open channels, or on-site structural BMPs for capture, treatment, and reuse.
- WC 3.4.5:** Require high-efficiency irrigation systems (low-flow drip, bubblers or low-flow sprinklers) in landscape plans. Ensure that the irrigation system is properly designed for the site.
- WC 3.4.6:** Continue implementation of the Water Efficient Landscaping and Irrigation Ordinance and subsequent updates (General Plan Policy OS-5.1, Implementing Action 5.1.b).

### **Water-Efficient Landscapes Policies**

- WC 3.4.7:** Landscape Water Meter – Require customer installation of dedicated water meters for landscape irrigation on properties with more than 20,000 square feet of irrigated area.
- WC 3.4.8:** Plant materials native to Merced, and encourage the use of drought-tolerant plant material.
- WC 3.4.9:** Minimize turf areas and avoid narrow turf areas, such as in parking strips.

- WC 3.4.10:** Provide for installation and maintenance of additional landscaping which helps maintain and improve air quality, by continuing to increase the extent of landscaped areas in the City using street trees, parking lot shading, median islands, and landscape buffers (General Plan Policy SD-1.3- Implementing Action 1.3.f).

## **MEASURE AR 4.4: AIR RESOURCES DEVELOPMENT REVIEW POLICIES**

- AR 4.4.1:** Accurately Determine and Fairly Mitigate the Local and Regional Air Quality Impacts of Projects Proposed in the City of Merced (General Plan Policy SD-1.1).
- AR 4.4.2:** Include the evaluation of Greenhouse Gas Emissions and Climate Change in environmental review documents prepared by the City (General Plan Policy SD-1.1, Implementing Action 1.1.g).
- AR 4.4.3:** Ensure that significant air quality impacts identified during CEQA review are consistently and fairly mitigated (General Plan Policy SD-1.1, Implementing Action 1.1.b).
- AR 4.4.4:** Work with employers and developers to provide employees and residents with attractive, affordable transportation alternatives. Encourage new development to provide on-site facilities that encourage employees to use alternative transportation modes as air quality and transportation mitigation measures (General Plan Policy T-2.9, Implementing Action 2.9.b). Examples are listed below.
- AR 4.4.5:** On an ongoing basis, as information becomes available and regulations are adopted by the City and by state and regional agencies, the City shall partner with air pollution control agencies to advise project applicants of greenhouse gas and air pollutant emission significance thresholds, mitigation requirements, and control regulations promulgated by federal, state, regional, and local agencies.
- AR 4.4.6:** On an ongoing basis, the City shall utilize its code enforcement police power to ensure ongoing compliance with requirements for air quality and sustainability measures incorporated into projects design, conditions of approval, and mitigation measures.
- AR 4.4.7:** The City may utilize guidance from the Institute for Local Government, California Attorney General's Office, California Air Pollution Control Officers Association, and other sources of technical guidance in determining appropriate and feasible mitigation measures which may be incorporated into land use plans, development projects and City operations to achieve GHG emission reductions.
- AR 4.4.8:** As information becomes available and regulations and policies are adopted by the City and by state and regional agencies, the City shall provide residents and project applicants with a “toolkit” of understandable feasible measures that can be used to reduce greenhouse gases and criteria pollutants, including educational materials on energy-efficient and “climate-friendly” products.

- AR 4.4.9:** On an ongoing basis, the City shall continue to evaluate its facility maintenance practices for opportunities to reduce GHGs, looking at facility cleaning and painting, parks maintenance, road maintenance, and utility system maintenance.
- AR 4.4.10:** As additional technical information becomes available, the City shall consider strengthening its standards for purchasing low polluting and climate friendly goods and services, requiring that emission reductions be achieved by vendors and contractors through City contracts and/or giving preference to those who demonstrate implementation of GHG and criteria air pollution emission reductions in their facilities and operations.
- AR 4.4.11:** State and federal legislation requires local government to include strategies to increase the efficiency of transportation infrastructure and to reduce vehicle trips in their transportation plans. Transportation control measures are most effective when infrastructure is in place that supports all transportation modes. This would include community-wide transportation improvements and on-site improvements at individual worksites and businesses. The City of Merced can support these strategies by encouraging developers to construct infrastructure that reduces congestion and/or trips. Examples alternative transportation site facilities:
- Showers and lockers provided in office buildings
  - Safe and secure bicycle parking areas
  - On-site employee cafeterias and eating areas
  - Convenient access to transit waiting areas from offices
  - The City may provide reduced parking requirements as an incentive for projects to incorporate measures proven to reduce employee commute trips or customer trips. Some methods developers/employers may use to encourage trip reduction and increased Average Vehicle Ridership include, rideshare matching, transit subsidies, vanpool subsidies, flexible work schedules, compressed work weeks, telecommuting, shuttle services, parking management, and guaranteed rides home.
  - Encouraging employers to provide preferential or subsidized parking for ride-sharing vehicles and low emission vehicles.
  - Providing land use patterns and site designs that increase commuter's ability to walk, bicycle, or use transit to get to work.

## **STRATEGY WR 5.2: WASTE REDUCTION DEVELOPMENT REVIEW POLICIES**

- WR 5.2.1:** The City shall continue to require provisions for recyclable material collection and storage areas to be incorporated into all residential development designs.



## **STRATEGY RE 6.2: RENEWABLE ENERGY DEVELOPMENT REVIEW POLICIES**

### **ACTIONS FOR MEASURE AR 6.1**

- RE 6.2.1:** Require all new subdivisions to maximize, to the extent feasible, proper orientation of lots with regard to solar utilization (General Plan Policy SD-3.1, Implementing Action 3.1.b).
- RE 6.2.2:** Encourage developers and builders to properly design all structures on each building lot in the City to take fullest advantage of solar use in heating and cooling (General Plan Policy SD-3.1, Implementing Action 3.1.c).
- RE 6.2.3:** Encourage developers and builders to maximize “passive” solar design, such as large south-facing windows for winter heat gains and overhangs and shading for summer heat protection (General Plan Policy SD-3.1, Implementing Action 3.1.d).

## **STRATEGY BE 7.6: BUILDING ENERGY CONSERVATION DEVELOPMENT REVIEW POLICIES**

- BE 7.6.1:** Encourage builders to develop “green” and/or LEED-Certified buildings (General Plan Policy SD-3.2, Implementing Action 3.2.d). Implement CALGreen.
- BE 7.6.2:** Favor actual project improvements over payment of fees when complying with RULE 9410 of the San Joaquin Valley Air Pollution Control District.
- BE 7.6.3:** Encourage new and renovated private and public buildings and site to contain “cool” pavements and roofs.
- BE 7.6.4:** Continue to require the planting of street trees along streets and inclusion of trees and landscaping for all development projects to help improve air-shed and minimize urban heat island effects.
- BE 7.6.5:** Continue to require new development to plant street trees approximately 40 feet apart, at a maximum, along City streets (General Plan Policy OS-1.4, Implementing Action 1.4.b).

## **APPENDIX F**

### **Merced Vision 2030 General Plan Policies that Support Climate Action Plan Goals**

#### **Value: Build Healthy Communities**

##### **Goal 1: Enhance Mobility of all Transportation Modes (EM)**

- Create a Balanced Transportation System that Provides for all Modes of Transportation. (General Plan Policy SD-4.1, “Create a Healthy Built Environment” - Implementing Action 4.1.c).
- Increase Biking and Walking through Street Design. (General Plan Policy SD-4.1, “Encourage Increased Physical Activity of Residents and Healthier Food Choices” - Implementing Action 4.1.a).
- Support and Enhance the Use of Public Transit (General Plan Policy T-2.2).
- Support a Safe and Effective Public Transit System (General Plan Policy T-2.3).
- Support and participate in regional public transit planning (General Plan Policy T-2.2, Implementing Action 2.2.e).
- Support Enhanced Railroad Passenger Service and High Speed Rail for Merced (General Plan Policy T-3.5).
- Encourage the Use of Bicycles (General Plan Policy T-2.4).
- Provide Convenient Bicycle Support Facilities to Encourage Bicycle Use (General Plan Policy T-2.5).
- Maintain and Expand the City’s Bikeway and Trail System (General Plan Policy OS-3.2).
- Maintain and Expand the Community’s Existing Bicycle Circulation System (General Plan Policy T-2.6).
- Maintain a Pedestrian-Friendly Environment (General Plan Policy T-2.7).
- Ensure Connectivity Between Existing and Planned Urban Areas (General Plan Policy L-1.9).
- Integrate Drainage Facilities With Bike Paths, Sidewalks, Recreation Facilities, Agricultural Activities, Groundwater Recharge, and Landscaping (General Plan Policy P-5.2).
- Promote Site Designs That Encourage Walking, Cycling, and Transit Use (General Plan Policy L-3.3 Implementing Action 3.3.a).
- Improve Planning for Pedestrians (General Plan Policy T-2.8).

## **Goal 2: Sustainable Community Design (SC)**

- Promote Compact, Mixed use, and Transit-Oriented Development (General Plan Policy SD-4.1, “Create a Healthy Built Environment” - Implementing Action 4.1.a).
- Integrate Land Use, Transportation, and Air Quality Planning for the Most Efficient Use of Public Resources and for a Healthier Environment (General Plan Policy SD-1.3).
- Control the Annexation, Timing, Density, and Location of New Land Uses Within the City’s Urban Expansion Boundaries (General Plan Policy UE-1.3.)
- Foster Compact and Efficient Development Patterns to Maintain a Compact Urban Form (General Plan Policy UE-1.2).
- Promote Annexation of Developed Areas within the City’s Specific Urban Development Plan (SUDP)/Sphere of Influence (SOI) During the Planning Period (General Plan Policy UE-1.5).
- Encourage Infill Development and a Compact Urban Form (General Plan Policy L-3.2).
- Support Increased Densities in Residential Areas (General Plan Policy H-1.1).
- Promote Balanced Development Which Provides Jobs, Services, and Housing (General Plan Policy L-1.1).
- Create Land Use Patterns That Will Encourage People to Walk, Bicycle, or Use Public Transit For an Increased Number of Their Daily Trips (General Plan Policy L-3.1).
- Implement Policies and Principles to Conform to the Intent of the San Joaquin Valley Regional Blueprint (General Plan Policy L-3.7).
- Maintain and Enhance the Unique Community Appearance of Merced (General Plan Policy UD-2.2).

## **Value: Quality Natural Resources**

## **Goal 3. Water Conservation and Technology**

- Encourage public water conservation efforts. Policy P-3.2 In Cooperation with the County and the Merced Irrigation District Work to Stabilize the Region’s Aquifer (General Plan Policy OS-5.1, Implementing Action 5.1.d).
- Ensure That Adequate Water Supply Can Be Provided Within the City’s Service Area, Concurrent With Service Expansion and Population Growth (General Plan Policy P-3.1).

- Provide Public Facilities and Operations That Can Serve as a Model for the Private Sector in Implementation of Air Quality Programs (General Plan Policy SD-1.5).
- Provide leadership in conserving urban water resources (General Plan Policy OS-5.1, Implementing Action 5.1.c).
- Promote Water Conservation Throughout the Planning Area (General Plan Policy OS-5.1).

#### **Goal 4. Protect Air Resources**

- *Ensure That New Development Provides the Facilities and Programs that Improve the Effectiveness of Transportation Control Strategies and Congestion Management Programs* (General Plan Policy T-2.9).
- Accurately Determine and Fairly Mitigate the Local and Regional Air Quality Impacts of Projects Proposed in the City of Merced (General Plan Policy SD-1.1).
- Expand programs to reduce vehicle miles traveled, stop and go traffic, and traffic congestion in order to improve traffic flow (General Plan Policy T-2.9, Implementing Action 2.9.c).

#### **Goal 5. Waste Reduction**

- Establish Programs to Recover Recyclable Materials and Energy From Solid Wastes Generated Within the City (General Plan Policy P-6.1).
- Continue implementation of programs in cooperation with the Merced County Regional Waste Management Authority to meet solid waste diversion goals (General Plan Policy P-6.2 -- Implementation Policy 6.2.c).
- Continuing citywide recycling efforts for homes and businesses (General Plan Policy P-6.1, Implementing Action 6.1.a).
- Support public and private recycling efforts to divert wood, leaves, and yard waste from being deposited in the landfill site (General Plan Policy P-6.1, Implementing Action 6.1.a).
- Continue to implement source reduction and recycling programs to minimize waste at the point of manufacture or use (General Plan Policy P-6.1, Implementing Action 6.1.a).

## **Value: Clean Energy Resources**

### **Goal 6: Increase the use of Renewable Resources**

- Promote the Use of Solar Energy Technology and Other Alternative Energy Resources (General Plan Policy SD-3.1).
- Encourage the use of solar energy in design and management of all new construction in the City (General Plan Policy SD-3.1, Implementing Action 3.1.a).
- Pursue further investigation of potential benefits utilizing building code revision, narrower streets, solar access rights, and other energy-saving techniques (General Plan Policy SD-3.1, Implementing Action 3.1.e).

### **Goal 7: Building Energy Conservation**

- Encourage the Use of Energy Conservation Features, Low-Emission Equipment, and Alternative Energy Sources for All New Residential and Commercial Development (General Plan Policy SD-3.2).
- Encourage new residential, commercial, and industrial development to reduce air quality impacts from area sources and from energy consumption (General Plan Policy SD-3.2, Implementing Action 3.2.c).
- Continue to require tree planting and promote “green building.” (General Plan Policy SD-4.1, “Create a Healthy Built Environment” - Implementing Action 4.1.d).

## **Value: Leaders and Partners**

### **Goal 8: Public Outreach and Involvement (PO)**

- Create Livable and Distinct Residential Neighborhoods (General Plan Policy L-1.8).
- Educate the Public on the Impact of Individual Transportation, Lifestyle, and Land Use Decisions on Air Quality (General Plan Policy SD-1.4).

## APPENDIX G

### Estimated Costs for retrofitting typical\* home built in 1970 to current Title 24 requirements

Description	Title 24	Installed at build-out	Cost to upgrade
Insulation Walls	R-13 min (standard is R-19)	R-11	unknown; wallboard or siding would need to be removed
Insulation Attic	R-19 min (standard is R-38)	R-13	\$500
Air conditioning	13 Seer low energy	not rated	\$4,000
Tight ducts, insulated	R-4.2 insulation, no leaks	Metal or perf. Flex	\$1,000
Air infiltration	Weather stripping, caulk, sealants	Door W/S	\$500
	(all pipe penetrations, vents, etc.)		
Windows	Vinyl, low-E, dual-glazed	Alum., single glazed	\$6,000
Screens	tight-mesh, nylon or wire	wire, open mesh	\$400
Lighting	low energy bulbs, some required on-off	incandescent, manual controls	\$300
	sensors, fluorescent fixtures in some rooms		
Heating	no pilots, new efficiency requirements	cont. burning pilots, no e-rating	\$2,500
Hot water heater	no pilots, new efficiency requirements	cont. burning pilots, no e-rating	\$400
	R-12 insulation	no insulation	
Water	insulated piping, low-flow fixtures,	galv, piping, no rated fixtures	\$1,200
Air controls	auto set-back t-stat	no rating	\$100
Air handler	platforms not used as plenum, must have	platforms used as plenum	\$300
	ducts		
		<b>Total</b>	<b>\$14,700</b>

\* 1,800 sq. ft. framed, stucco exterior, comp. roof

Estimate Provided by Jim Marks, General Manager, The Cirrus Company and Heritage Management Group. July 2011.



## APPENDIX H

### RESOLUTION NO. 2012- 70

#### **A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MERCED, CALIFORNIA, ADOPTING THE CITY OF MERCED CLIMATE ACTION PLAN AND ENVIRONMENTAL REVIEW NO. 11-28, A NEGATIVE DECLARATION**

WHEREAS, The State of California has taken steps to address greenhouse gas emission through the enactment of Assembly Bill 32 (2006 Session of the California Legislature); and,

WHEREAS, Cities and counties throughout the United States of America have begun taking local actions to reduce greenhouse gas emissions; and,

WHEREAS, Local government actions taken to reduce greenhouse gas emissions provide multiple local benefits including decreased air pollution, reduced energy utility bills, increased choice in mobility, and development of livable communities for its businesses and residents; and,

WHEREAS, Draft *Merced Vision 2030 General Plan* Policy SD-1.7 states: “Develop and Implement a Climate Action Plan for the City”; and,

WHEREAS, In November 2009, the City Council accepted Energy Efficiency and Conservation Block Grant funds from the U.S. Department of Energy to undertake several projects to increase energy efficiency, including the drafting of a Climate Action Plan (CAP); and,

WHEREAS, Work by City staff on Climate Action Planning began in January 2010, and focused on drafting the *City of Merced Climate Action Plan Background Report*, which included the City’s first Greenhouse Gas Emission Inventory; and,

WHEREAS, The background report was completed in January 2011 and helped frame the next steps in the process to select a greenhouse gas reduction target and to draft the Climate Action Plan; and,

WHEREAS, On September 7, 2010, the City Council adopted City Council Resolution 2010-80 to take a leadership role to reduce greenhouse gas emissions through future adoption of a Climate Action Plan; and,

N:\SHARED\Attorney\Resolutions\2012\Planning\Adopting Climate Action Plan - v2.doc

WHEREAS, On September 7, 2010, the City Council directed staff to begin the recruitment process for members of a Climate Action Plan Ad-Hoc Advisory Committee and, subsequently appointed the Committee on December 20, 2010; and,

WHEREAS, On February 22, 2011, the Merced City Council adopted greenhouse gas reduction parameters, targets, and an approach to drafting the City's Climate Action Plan, notably, to work with a community-based Committee to identify ways to reduce greenhouse gas emissions to 20% below 1990 levels by 2020 for Government-based facilities and the Community as a whole and subsequently revised by the City Council to 1990 levels by 2020 at their June 4, 2012 public hearing; and,

WHEREAS, The Climate Action Plan Ad-Hoc Advisory Committee has met monthly since January 2011, and concluded its work to prepare a Climate Action Plan with City Staff in September 2011; and,

WHEREAS, The community-based Committee recommends 154 possible actions to reduce greenhouse gas emissions for Government-based facilities and the Community as a whole; and,

WHEREAS, Pursuant to the California Environmental Quality Act (CEQA) staff conducted an Initial Study to determine whether the Climate Action Plan would have any significant effects on the environment and found that no significant effects would occur; and,

WHEREAS, Staff prepared a Negative Declaration for the Climate Action Plan; and for which the public comment period was open from October 6, 2011 to November 7, 2011; and,

WHEREAS, At a duly noticed public hearing on October 1, 2012, the City Council considered all testimony and comments regarding the proposed City of Merced Climate Action Plan; and,

WHEREAS, The City Council has considered the initial study and proposed Negative Declaration together with comments received during the public review process, and finds on the basis of the whole record that there is no substantial evidence the Climate Action Plan may have a significant adverse effect on the environment, and that the Negative Declaration reflects the lead agency's independent judgment and analysis.

N:\SHARED\Attorney\Resolutions\2012\Planning\Adopting Climate Action Plan - v2.doc

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MERCED  
DOES HEREBY RESOLVE, DETERMINE, FIND, AND ORDER AS  
FOLLOWS:

SECTION 1. The City Council of the City of Merced hereby adopts the City  
of Merced Climate Action Plan.

PASSED AND ADOPTED by the City Council of the City of Merced at a  
regular meeting held on the 1st day of October 2012, by the following  
vote:

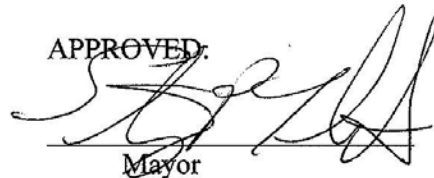
AYES: Council Members: BLAKE, DOSSETTI, MURPHY, RAWLING,  
LOR, PEDROZO, THURSTON

NOES: Council Members: NONE

ABSENT: Council Members: NONE

ABSTAIN: Council Members: NONE

APPROVED:



Mayor

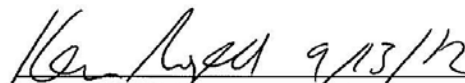
ATTEST:  
JOHN M. BRAMBLE, CITY CLERK

BY:   
Assistant Deputy City Clerk

(SEAL)



APPROVED AS TO FORM:

 9/13/12  
City Attorney Date

N:\SHARED\Attorney\Resolutions\2012\Planning\Adopting Climate Action Plan - v2.doc

## **APPENDIX I**

### **Catalog of Recommended Actions by Type**

#### **Action Acronyms**

Enhance Mobility of all Transportation Modes **(EM)**  
Sustainable Community Design **(SC)**  
Water Conservation and Technology **(WC)**  
Protect Air Resources **(AR)**  
Waste Reduction **(WR)**  
Increase the Use of Renewable Energy Resources **(RE)**  
Building Energy Conservation **(BE)**  
Public Outreach and Involvement **(PO)**

#### **Numbering Format of Action Items**

The numbering format of actions references an action's goal and strategy. For example, Action 4.3.1 is known as Action 1 of Strategy 3 of Goal 4.

#### **Types of Action Items**

##### *Permit Tools*

- New Codes
- New Standards
- New Guidelines and Policies
- New/Adjusted Fee Program
- Encourage/Incentives
- Use of Existing Review Tools

##### *Infrastructure*

- Plan
- Consider/Explore
- Construct

##### *Public Services/Programs*

- Plan/Develop
- Explore/Encourage
- Enhance Existing Efforts

#### **Bolded Action Items**

**Bolded** action items are those that are part of a formally adopted plan, such as the *Merced Vision 2030 General Plan* (Including the Housing Element), and the *2010 Urban Water Management Plan*. By state law, the City is required to abide by its own General Plan, unless amended through a public hearing process.

#### **State Mandates**

These action items can be: 1) direct requirements or; 2) directly responsive. For example, a "direct requirement" refers directly to either the law or codes provided by the state, such as the CAL Green Code, or requirement for commercial recycling. "Responsive" actions are those that seek to meet a broader state mandate. For example, the CAP includes many water conservation "responsive" actions that seek to meet the broader state mandate of reducing per capita water consumption by 20% by 2020. While this is the mandate, the actions are simply a response to that, and are not themselves individual mandates. The City has flexibility in selecting these "responsive" actions.

## **PERMIT TOOLS**

### **New Codes**

**SC 2.1.3 (Encouragement to Develop Infill Sites)**

**SC 2.1.6 (Multi-Family Increased Density)**

SC 2.2.5 (Create a work-live ordinance)

**SC 2.2.6 (Codify Village Core Land Uses)**

**SC 2.2.7 (Create Business Park Zone)**

**SC 2.2.8 (Create Mixed Use Industrial Zone)**

RE 6.1.7 (Adopt code allowances for renewable energy generators)

RE 6.1.11 (Peaker Plant Regulation)

BE 7.2.4 (Energy Efficiency Performance Code)

**STATE MANDATE**

### **New & Clarified Standards**

EM 1.3.9 (Update City Design Standards)

EM 1.4.5 (Redeveloped Pedestrian Environs)

**SC 2.4.1 (Gateway Design Standards in County and City)**

AR 4.2.5 (Establish City Design Standards for traffic roundabout)

BE 7.2.3 (Update the City's Public Infrastructure Design Standards)

### **New Guidelines and Policies**

**EM 1.1.1 (Mobility Design Guidelines)**

**EM 1.1.2 (Mobility Design Guidelines)**

SC 2.2.9 (Bellevue Corridor Community Plan)

SC 2.3.2 (Infrastructure Encouragement Zones)

AR 4.1.3 (Implement "Complete Streets" policies)

BE 7.5.2 (Urban Heat Island)

PO 8.3.3 (Development of the Sustainable Community Strategy)

**STATE MANDATE**

**STATE MANDATE**

### **New/Adjusted Fee Programs**

**SC 2.3.1 (Maintain Reduced "Infill" fees)**

**WC 3.1.6 (Consider a tiered water rate structure)**

**STATE MANDATE**

### **Support/Facilitate/Encourage/Incentives**

EM 1.3.7 (Encourage Destination Amenities)

**SC 2.1.7 (Identify and Encourage Dev. of Vacant Infill Sites)**

**SC 2.1.6 (Identify Suitable Multi-family Development Sites)**

**SC 2.1.2 (Encourage Cleanup/Development of Brownfields)**

**STATE MANDATE**

### **SC 2.1.1 (Focus Development Downtown)**

SC 2.2.1 (Encourage Mixed Use Developments)

SC 2.2.2 (Create Neighborhood Activity nodes)

SC 2.2.3 (Expand Employment Base)

SC 2.3.3 (Encourage High-Performance Designs)

### **SC 2.4.3 (Support Commercial Design Improvement Projects)**

### **SC 2.4.4 (Support Downtown Beautification Efforts)**

RE 6.1.1 (Encourage installation of solar energy systems)

RE 6.1.2 (Implement solar hot water & space heating program)

RE 6.1.3 (Encourage on-site renewable energy systems)

RE 6.1.4 (Incentivize siting of solar hot water systems for new pools)

RE 6.1.8 (Community financing of renewable systems)

BE 7.2.2 (Promote enhanced energy conservation standards)

BE 7.3.6 (Encourage energy audits at time of remodels)

BE 7.4.1 (Implement a “Green Building” Incentive Program)

## **Use of Existing Review Tools**

### **SC 2.1.4 (Limit Rural Residential Expansions)**

### **SC 2.4.2 (Expand program to underground utilities)**

### **WC 3.1.1 (Enforce existing water shortage regulations)**

WR 5.1.6 (Implement Green Code)

BE 7.2.1 (Implement the minimum CALGreen standards)

BE 7.5.4 (Open Space/Protect and Conserve Tree-Cover Areas)

BE 7.5.5 (Maintain Tree Cover)

PO 8.1.8 (Support San Joaquin Valley Blueprint)

PO 8.3.4 (Revitalized Urban Villages)

**STATE MANDATE**

## **INFRASTRUCTURE**

### **Plan**

### **EM 1.2.2 (Mobility Access at Transit Stations)**

### **EM 1.3.1 (Trails along Urban Streams)**

EM 1.3.6 (Plan Updates)

### **EM 1.4.4 (Open Space/Green Streets)**

AR 4.1.4 (Enable Transfer Between Mobility Options)

AR 4.2.4 (Reduce Idling)

### **Consider/Explore**

EM 1.3.8 (Expanded Bike Realm in Streets)

EM 1.4.1 (Pedestrian Master Plan)

### **WC 3.2.5 (Explore use of MID surface water for other than Ag)**

### **WC 3.2.6 (Consider Use of Reclaimed Water)**



WC 3.2.8 (Consider upgrades to energy efficiency of water systems)  
 WC 3.3.2 (Convert industrial & irrigation demands to recycled H<sub>2</sub>O)  
 BE 7.1.2 (Title 24 Enhanced for City Buildings)  
 BE 7.1.3 (Renewable energy systems on City-owned facilities)  
 AR 4.1.8 (Narrow Streets for reduced speeds and traffic)  
**AR 4.2.1 (Expand Green Fleet)**  
 AR 4.2.8 (Explore Neighborhood Electric Vehicle Network)  
 AR 4.2.9 (Explore methods to reduce heavy duty diesel emissions)  
 RE 6.1.11 (Consider methods to discourage *Peaker Plants*)

## Construct

**EM 1.2.1 (M / Bellevue Transitway)**  
**EM 1.3.2 (Coordination with Merced County Facilities)**  
**EM 1.3.3 (South Merced Facilities)**  
 EM 1.3.4 (20 miles of bike lanes)  
 EM 1.3.5 (Continuous Bike Connections with Land Uses)  
 EM 1.4.3 (Shared Streets)  
**WC 3.2.3 (Reach a long-water term transfer agreement with MID)**  
 WC 3.2.7 (Increase water storage capacity)  
**AR 4.1.2 (Encourage development of communication infrastructure)**  
**AR 4.1.6 (Complete network of bicycle and pedestrian routes)**  
 AR 4.1.9 (Park and Ride Lots)  
 AR 4.2.3 (Signal Timing)  
 RE 6.1.5 (Install methane-powered electric generators at WWTP)  
 BE 7.1.1 (Complete Phase I of the City Energy Retrofit Project)  
 BE 7.1.6 (Energy efficiency upgrade when replacing equipment)  
 BE 7.1.7 (Lighten colors of rooftops and street paving)

## Public Services and Programs

### Plan/Develop

<b>SC 2.1.5 (Work to annex Rural Residential Areas)</b>	
<b>SC 2.1.6 (Identify Suitable Multi-family Development Sites)</b>	STATE MANDATE
SC 2.2.4 (Industrial Workforce Housing Nexus study)	
<b>SC 2.4.2 (Expand program to underground utilities)</b>	
<b>SC 2.4.5 (Revitalize Existing Urban Villages)</b>	
<b>WC.3.1.4 (Implement voluntary Washing Machine Rebate Prgm)</b>	STATE MANDATE
<b>WC.3.1.5 (Implement voluntary Conservation Program)</b>	STATE MANDATE
<b>WC.3.1.7 (Implement voluntary-Low-Flush Toilet Program)</b>	STATE MANDATE
<b>WC.3.1.8 (Implement the <i>Large Landscape Conservation Program</i>)</b>	STATE MANDATE
<b>WC.3.1.2 (Implement voluntary residential water audit program)</b>	STATE MANDATE
<b>WC 3.2.1 (Pursue Demand-Reduction programs for potable water)</b>	
<b>WC.3.2.2 (Perform a <i>System Water Audit</i>)</b>	STATE MANDATE

WR 5.1.3 (Develop a volunteer “Master Recycler” program)  
 WR 5.1.4 (Establish a Business and Resident reuse campaign)  
 WR 5.1.5 (Implement State Commercial recycling requirements)  
 WR 5.1.7 (Provide recycling opportunities at special events)  
 WR 5.1.8 (Form waste-reduction programs w/schools and businesses)  
 WR 5.1.9 (Develop and implement a waste audit program)  
 WR 5.1.11 (Consider program to evaluate major waste generators)  
 WR 5.1.12 (Waste Diversion and Recycling Programs)  
 RE 6.1.9 (Establish AB 811 energy financing districts)  
 BE 7.1.5 (Energy efficient standard procurement policy)  
 BE 7.3.1 (Assessment district bond financing program)  
**BE 7.3.4 (Low/moderate income family weatherization program)**  
 BE 7.3.7 (Explore financing tool for residential energy retrofits)  
 BE 7.3.9 (Residential Rental energy efficiency strategies)  
 BE 7.4.2 (Free Resource and Energy Business Evaluation)  
 BE 7.4.3 (Energy efficiency rebate programs)  
 BE 7.4.4 (Establish PACE (AB 811) program)  
 BE 7.4.5 (Revolving loan fund for industrial Energy Projects)  
 BE 7.5.3 (Merced Tree Planting Initiative)  
**PO 8.1.3 (Coordinate waste reduction efforts with State)**  
**PO 8.1.4 (Implement an Energy Program Website)**  
 PO 8.1.5 (DoRight Leadership Corps)  
 PO 8.1.7 (Cool Roofs and Pavement Campaign)  
 PO 8.2.1 (Create a Green Business Challenge)  
 PO 8.2.2 (Encourage efforts of REACON team)  
 PO 8.2.4 (Green Business Program)  
 PO 8.3.2 (Community-Climate Action Challenge Program)

**STATE MANDATE**

**STATE MANDATE**

## Consider/Explore/Encourage

**EM 1.2.4 (Transit Connection between jobs and housing)**  
 WC 3.3.1 (Landscape audits for large commercial customers)  
 AR 4.1.7 (Local car-share program)  
**AR 4.1.10 (Encourage Community Based Farms and gardens)**  
 AR 4.2.6 (Purchase fuel efficient vehicles / alternative fuel vehicles)  
 AR 4.3.1 (Participate in the Clean Green Yard Machine Program)  
**WR 5.1.1 (Reuse Construction Materials)**  
 WR 5.1.10 (Consider establishing recycling incentives)  
 WR 5.1.13 (Consider implementing food waste segregation)  
 RE 6.1.6 (Enable B20 Biodiesel to fuel City Fleet)  
 RE 6.1.10 (Revolving loan fund for renewable energy)  
 RE 6.1.12 (Geothermal and grey-water plumbing options)  
 BE 7.1.4 (Day time Janitorial Service)  
 BE 7.3.5 (Promote point-of-sale energy audits and retrofits)  
 BE 7.3.8 (Promote Energy Upgrade California)  
**PO 8.1.1 (Form Partnership with local energy utilities)**

## Enhance Existing Efforts

### **EM 1.2.3 (Downtown Mobility Connections)**

EM 1.4.2 (Bike, Pedestrian)

### **WC.3.1.3 (Enhance Residential Retrofit Program)**

STATE MANDATE

### **WC.3.1.9 (Enhance the existing *Water Metering Program*)**

STATE MANDATE

### **WC.3.2.4 (Preserve and enhance MID surface water system)**

### **AR 4.1.1 (Support employer-based trip reduction programs)**

STATE MANDATE

AR 4.1.5 (Increasing Use of Ridesharing)

AR 4.2.2 (Adopt a City-fleet fuel-efficiency standard)

AR 4.2.7 (Retire or sell old and underutilized vehicles)

WR 5.1.2 (Locate a recycling / hazardous-waste facility)

BE 7.1.8 (Recover food waste)

### **BE 7.3.2 (Public Information on Energy Conservation)**

STATE MANDATE

### **BE 7.3.3 (Low-income homeowners and renters energy audits)**

STATE MANDATE

### **BE 7.5.1 (Community Planting Program)**

### **PO 8.1.2 (Coordinate Bike Plan Efforts with County and UCM)**

PO 8.1.6 (Work with Community Action Agency weatherization)

PO 8.2.3 (Partnerships with area employers)

### **PO 8.3.1 (LEED Neighborhood Planning)**

## APPENDIX J

### Business-Related Recommended Actions

With the Merced Climate Action Plan, there are no new requirements on local businesses, no new fees, assessments or other charges, and it demands no monitoring or tracking of emissions or reductions thereof. These parameters apply to new and existing businesses alike. Rather, the CAP offers a list of recommended business-friendly actions primarily based on incentives, improved communication, and encouragement. Of the total 156 recommended actions in the Merced CAP, 73 are business-related, with most of these based on incentives, improved communication, and encouragement. Appendix J views the recommended actions from the perspective of a local business owner and sorts the recommended actions into various types, including: incentives, improved communication, encouragement, state mandates and studies. These types are defined below.

#### KEY

##### **Incentive-Based Actions**

Incentive-based actions are supportive of businesses and may include efforts to provide funding, infrastructure, advertising, relief from development standards, and formation of “win-win” community partnerships.

##### **Improved Communication**

Improved communication-based actions are intended to: 1) add certainty to the City’s development review and permit processes; 2) reduce subjective reviews and decisions (create a level playing field); and, 3) present current code requirements in user-friendly guidelines.

##### **Encouragement**

Encouragement of action may be attained through educational and promotional materials.

##### **State Mandates**

State Mandates are actions required by the State of California, and are listed as recommended action items in the City’s CAP under respective categories, for example “Waste Reduction,” “Water Conservation,” etc.

##### **Studies**

Some recommended actions identify a need to prepare studies to determine whether or not potential subsequent programs are worthy to implement.

##### **Not Applicable (NA)**

Many action items of the Climate Action Plan do not pertain to businesses.

## Goal 1. Enhance Mobility of All Transportation Modes (EM)

Strategies and Actions	Incentives	Communication	Encouraged	Mandates	Studies	NA
<b>STRATEGY EM 1.1: SITE DESIGN PLANNING:</b>						
EM 1.1.1 Mobility Design Standards		×				
EM 1.1.2 Mobility Design Guidelines		×				
<b>STRATEGY EM 1.2: TRANSIT PLANNING:</b>						
EM 1.2.1 M / Bellevue Transitway						×
EM 1.2.2 Mobility Access at Transit Stations						×
EM 1.2.3 Downtown Mobility Connections						×
EM 1.2.4 Transit Connection between jobs and housing						×
<b>STRATEGY EM 1.3: BICYCLE PLANNING AND PROJECTS:</b>						
EM 1.3.1 Trails along Urban Streams						×
EM 1.3.2 Coordination with Merced County Facilities						×
EM 1.3.3 South Merced Facilities						×
EM 1.3.4 20 miles of bike lanes						×
EM 1.3.5 Continuous Bike Connections with Land Uses						×
EM 1.3.6 Plan Updates						×
EM 1.3.7 Encourage Destination Amenities	×					
EM 1.3.8 Expanded Bike Realm in Streets						×
EM 1.3.9 Update City Design Standards		×				
<b>STRATEGY EM 1.4: PEDESTRIAN PLANNING AND PROJECTS:</b>						
EM 1.4.1 Pedestrian Master Plan		×				
EM 1.4.2 Safe Routes to School						×
EM 1.4.3 Shared Streets						×
EM 1.4.4 Green Streets						×
EM 1.4.5 Redeveloped Pedestrian Environs		×				

## Goal 2. Sustainable Community Design (SC)

Strategies and Actions	Incentives	Communication	Encouraged	Mandates	Studies	NA
<b>STRATEGY SC 2.1: COMPACT URBAN FORM / INFILL:</b>						
SC 2.1.1 Focus Development Downtown			×			
SC 2.1.2 Encourage Cleanup/Development of Brownfields			×			
SC 2.1.3 Encouragement to Develop Infill Sites	×					
SC 2.1.4 Limit Rural Residential Expansions						×
SC 2.1.5 Work to annex Rural Residential Areas						×
SC 2.1.6 Identify Suitable Multi-family Development Sites						×
SC 2.1.7 Identify and Encourage Dev. of Vacant Infill Sites	×					
<b>STRATEGY SC 2.2: MIXED-USE / TRANSIT ORIENTED DEV.</b>						
SC 2.2.1 Encourage Mixed Use Developments			×			
SC 2.2.2 Create Neighborhood Activity nodes			×			
SC 2.2.3 Expand Employment Base	×		×			
SC 2.2.4 Industrial Dev. Workforce Housing Nexus study						×
SC 2.2.5 Create a work-live ordinance	×					
SC 2.2.6 Codify Village Core Land Uses		×				
SC 2.2.7 Create Business Park Zone		×				
SC 2.2.8 Create Mixed Use Industrial Zone	×					
SC 2.2.9 Craft the Bellevue Corridor Community Plan						×
<b>STRATEGY SC 2.3: GROWTH MANAGEMENT PLANNING:</b>						
SC 2.3.1 Maintain Reduced fees in Infill Area	×					
SC 2.3.2 Infrastructure Encouragement Zones		×				
SC 2.3.3 Encourage High-Performance Designs	×					
<b>STRATEGY SC 2.4: COMMUNITY APPEARANCE:</b>						
SC 2.4.1 Gateway Design Standards in County and City		×				
SC 2.4.2 Expand program to underground utilities						×
SC 2.4.3 Support Commercial Design Improvement Projects	×					
SC 2.4.4 Support Downtown Beautification Efforts	×					
SC 2.4.5 Revitalize Existing Urban Villages						×



### Goal 3. Water Conservation and Technology (WC)

Strategies and Actions	Incentives	Communication	Encouraged	Mandates	Studies	NA
<b>STRATEGY WC 3.1: WATER CONSERVATION AND TECHNOLOGY:</b>						
WC 3.1.1 Enforce existing water shortage regulations						×
WC 3.1.2 Implement voluntary residential water audit program						×
WC 3.1.3 Enhance Residential Retrofit Program						×
WC 3.1.4 Implement voluntary Washing Machine Rebate Prgm.						×
WC 3.1.5 Implement voluntary Conservation Program			×			
WC 3.1.6 Consider a tiered water rate structure					×	
WC 3.1.7 Implement voluntary <i>Low-Flush Toilet Program</i>						×
WC 3.1.8 Implement the <i>Large Landscape Conservation Program</i>						×
WC 3.1.9 Enhance the existing <i>Water Metering Program</i>						×
<b>STRATEGY WC 3.2: REDUCE GROUNDWATER PUMPING:</b>						
WC 3.2.1 Pursue Demand-Reduction programs for potable water			×			
WC 3.2.2 Perform a <i>System Water Audit</i>						×
WC 3.2.3 Reach a long-water term transfer agreement with MID						×
WC 3.2.4 Preserve and enhance MID surface water system						×
WC 3.2.5 Explore use of MID surface water for other than Ag..						×
WC 3.2.6 Consider Use of Reclaimed Water					×	
WC 3.2.7 Increase water storage capacity						×
WC 3.2.8 Upgrade energy efficiency of water systems						×
<b>STRATEGY WC 3.3: WATER EFFICIENT LANDSCAPES:</b>						
WC 3.3.1 Landscape audits for large commercial customers					×	
WC 3.3.2 Convert industrial & irrigation demands to recycled H <sub>2</sub> O					×	

## Goal 4. Protect Air Resources (AR)

Strategies and Actions	Incentives	Communication	Encouraged	Mandates	Studies	NA
<b>STRATEGY AR 4.1: REDUCED VEHICLE TRIPS:</b>						
AR 4.1.1 Support employer-based trip reduction programs			×			
AR 4.1.2 Encourage development of communication infrastructure			×			
AR 4.1.3 Implement “Complete Streets” policies						×
AR 4.1.4 Enable Transfer Between Mobility Options						×
AR 4.1.5 Increasing Use of Ridesharing						×
AR 4.1.6 Complete network of bicycle and pedestrian routes						×
AR 4.1.7 Local car-share program						×
AR 4.1.8 Narrow Streets for reduced speeds and traffic						×
AR 4.1.9 Construct park-and-ride lots						×
AR 4.1.10 Encourage Community Based Farms and gardens						×
<b>STRATEGY AR 4.2: CLEAN TRIPS – CLEAN VEHICLES:</b>						
AR 4.2.1 Expand Green Fleet			×			
AR 4.2.2 Adopt a City-fleet fuel-efficiency standard						×
AR 4.2.3 Improved Traffic Signal Coordination						×
AR 4.2.4 Reduce Idling					×	
AR 4.2.5 Establish City Design Standards for traffic roundabouts						×
AR 4.2.6 Purchase fuel efficient vehicles / alternative fuel vehicles						×
AR 4.2.7 Retire or sell old and underutilized vehicles						
AR 4.2.7 Explore Neighborhood Electric Vehicle Networks						×
AR 4.2.8: Explore methods to rReduce heavy-duty diesel emissions					×	
<b>STRATEGY AR 4.3: REDUCE NON-VEHICULAR EMISSIONS:</b>						
AR 4.3.1 Participate in the Clean Green Yard Machine Program						×

## Goal 5. Waste Reduction (WR)

Strategies and Actions	Incentives	Communication	Encouraged	Mandates	Studies	NA
<b>STRATEGY WR 5.1: REDUCE, REUSE, AND RECYCLE:</b>						
WR 5.1.1 Reuse construction materials	×					
WR 5.1.2 Recycling / hazardous-waste facility	×					
WR 5.1.3 Develop a volunteer “Master Recycler” program						×
WR 5.1.4 Establish a Business and Resident reuse campaign			×			
WR 5.1.5 Implement State Commercial recycling requirements				×		
WR 5.1.6 Implement Green Code				×		
WR 5.1.7 Provide recycling opportunities at special events						×
WR 5.1.8 Form waste-reduction programs w/schools and business			×			
WR 5.1.9 Develop and implement a waste audit program			×			
WR 5.1.10 Consider establishing recycling incentives						×
WR 5.1.11 Consider program to evaluate major waste generators			×			
WR 5.1.12 Waste Diversion and Recycling Program						×
WR 5.1.13 Consider implementing food waste segregation	×					

## Goal 6. Increase the use of Renewable Energy Sources (RE)

Strategies and Actions	Incentives	Communication	Encouraged	Mandates	Studies	NA
<b>STRATEGY RE 6.1: RENEWABLE ENERGY SYSTEMS:</b>						
RE 6.1.1 Encourage installation of solar energy systems	×					
RE 6.1.2 Implement solar hot water & space heating program	×					
RE 6.1.3 Encourage on-site renewable energy systems			×			
RE 6.1.4 Incentivize siting of solar hot water systems for new pools	×					
RE 6.1.5 Install methane-powered electric generators at WWTP						×
RE 6.1.6 Enable B20 Biodiesel to fuel City Fleet						×
RE 6.1.7 Adopt code allowances for renewable energy generators	×					
RE 6.1.8 Community financing of renewable systems			×			
RE 6.1.9 Establish AB 811 energy financing districts	×					
RE 6.1.10 Revolving loan fund for renewable energy						×
RE 6.1.11 Peaker Plant Regulation					×	
RE 6.1.12 Geothermal and grey-water plumbing options	×					

## Goal 7. Building Energy Conservation (BE)

Strategies and Actions	Incentives	Communication	Encouraged	Mandates	Studies	NA
<b>STRATEGY BE 7.1: GREEN CITY FACILITIES AND INFRASTRUCTURE:</b>						
BE 7.1.1 Complete Phase I of the City Energy Retrofit Project						×
BE 7.1.2 Construct City buildings to exceed Title 24 by 15%.						×
BE 7.1.3 Renewable energy systems on City-owned facilities						×
BE 7.1.4 Daylight janitorial services						×
BE 7.1.5 Energy efficient standard procurement policy						×
BE 7.1.6 Energy efficiency upgrade when replacing equipment						×
BE 7.1.7 Lighten colors of rooftops and street paving						×
BE 7.1.8 Recover food waste						×
<b>STRATEGY BE 7.2: ENERGY EFFICIENCY IN NEW DEVELOPMENT: D</b>						
BE 7.2.1: Implement the minimum CALGreen standards				×		
BE 7.2.2: Promote enhanced energy conservation standards			×			
BE 7.2.3: Update the City's Public Infrastructure Design Standards						×
BE 7.2.4: Energy Efficiency Performance Code	×					
<b>STRATEGY BE 7.3: RESIDENTIAL ENERGY EFFICIENCY:</b>						
BE 7.3.1 Assessment district bond financing program	×					
BE 7.3.2 Public Information on Energy Conservation			×			
BE 7.3.3 Low-income homeowners and renters energy audits						×
BE 7.3.4 Low/moderate income family weatherization program						×
BE 7.3.5 Promote point-of-sale energy audits and retrofits						×
BE 7.3.6 Encourage energy audits at time of remodels						×
BE 7.3.7 Explore financing tool for residential energy retrofits						×
BE 7.3.8 Promote Energy Upgrade California						×
BE 7.3.9 Residential Rental energy efficiency strategies						×

Strategies and Actions	Incentives	Communication	Encouraged	Mandates	Studies	NA
<b>STRATEGY BE 7.4: COMMERCIAL AND INDUSTRIAL ENERGY PERFORMANCE:</b>						
BE 7.4.1 Implement a “Green Building” Incentive Program	×					
BE 7.4.2 Free Resource and Energy Business Evaluation			×			
BE 7.4.3 Energy Efficiency Rebate Programs			×			
BE 7.4.4 Establish PACE (AB 811) program	×					
BE 7.4.5 Revolving loan fund for industrial Energy Projects	×					
BE 7.4.6 Green building standards for remodeled buildings						
<b>STRATEGY BE 7.5: URBAN FORESTRY / HEAT ISLAND EFFECT:</b>						
BE 7.5.1 Community Planting Program						×
BE 7.5.2 Heat-Island Effect Guidelines		×				
BE 7.5.3 Merced Tree Planting Initiative						×
BE 7.5.4 Protect and Conserve Tree-Cover Areas						×
BE 7.5.5 Regulate removal and replacement of trees						×



## Goal 8. Public Outreach and Involvement (PO)

Strategies and Actions	Incentives	Communication	Encouraged	Mandates	Studies	NA
<b>STRATEGY PO 8.1: COMMUNITY RESOURCE:</b>						
PO 8.1.1 Form Partnership with local energy utilities	×					
PO 8.1.2 Coordinate Bike Plan Efforts with County and UCM						×
PO 8.1.3 Coordinate waste reduction efforts with State						×
PO 8.1.4 Implement an Energy Program Website			×			
PO 8.1.5 DoRight Leadership Corps			×			
PO 8.1.6 Work with Community Action Agency weatherization						×
PO 8.1.7 Cool Roofs and Pavement Campaign			×			
PO 8.1.8 Support the San Joaquin Valley Blueprint						×
<b>STRATEGY PO 8.2: SUPPORT A GREEN ECONOMY:</b>						
PO 8.2.1 Create a Green Business Challenge			×			
PO 8.2.2 Encourage efforts of REACON team						×
PO 8.2.3 Partnerships with area employers	×		×			
PO 8.2.4 Green Business Program			×			
<b>STRATEGY PO 8.3: SUPPORT SUSTAINABLE NEIGHBORHOODS:</b>						
PO 8.3.1 LEED Neighborhood Planning						×
PO 8.3.2 Community-Climate Action Challenge Program						×
PO 8.3.3 Development of the Sustainable Community Strategy				×		
PO 8.3.4 Revitalized Urban Villages						×